Peer Relationships, Play and Language of Visually Impaired Children

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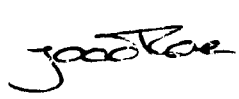
Author's declaration

I declare that the work in this dissertation was carried out in accordance with the Regulations of the University of Bristol. The work is original except where indicated by special reference in the text and no part of the dissertation has been submitted for any other degree.

Any views expressed in the dissertation are those of the author and in no way represent those of the University of Bristol.

The dissertation has not been presented to any other University for examination either in the United Kingdom or overseas.

Excluding Appendixes and Tables this thesis is no longer than 80,000 words.



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1. Introduction

1.1 Introduction to the field of study

It is widely accepted that vision plays a very important role in children's development and that the presence of a severe visual impairment, or blindness, has such a significant impact on children's perceptual experience that they are impelled to make representations of the world and to make sense of things through routes which may be characteristically distinct from those of other children.

This fact has encouraged researchers to speculate on the nature and extent of these distinctions and very often researchers saw the condition of blindness as a kind of 'natural experiment' which provided them with intriguing possibilities for exploring the relationship between visual information, language and other domains of thinking, and the characteristics which are displayed by children without vision in trying to overcome their difficulties. (See, for example, Dunlea, 1989.)

However, there are a number of ways in which recent research evidence encourages us to shift attention away from attempts to characterise and compare children with visual impairments with 'sighted' children, to a new focus of interest. In contrast, recent research is more focused on the processes through which children and adults or peers interact with one another in the learning environment, the strategies which adults adopt and the active involvement which

children are prompted towards, as they live, play and learn together (Rogoff, 1990).

There are some important factors that underpin this new trend in research. One important factor which has begun to influence current thinking about children's potential for learning language and for cognitive growth, is the importance of inter-personal contexts. Most children have a need to discover more about objects and events in the environment, to pass on material wants and to express feelings. But all of this occurs, in the early years at least, through interaction with familiar adults as part of the tacit and routine arrangements of children's activities in the everyday social contexts of care and play, which are not perceived as instructional.

This approach is epitomized in the field of study known as socio-constructivism, represented in the work of writers such as Burgess (1993), Moll (1990), Rogoff (1990) or Wood (1988). Socio-constructivism dismisses the view that in order to learn more about how children think and learn, we must focus on individuals and their solitary problem-solving. An important theme of socio-constructive accounts is that children are guided towards competence and independence in learning through interaction with more mature partners.

Socio-constructive approaches have profound implications for understanding processes of teaching and learning in children with visual impairments in real life social contexts such as the classroom. Essentially, they focus on the processes by which children's thinking and development are stretched and bolstered in the immediate social contexts in which children are involved in different forms of joint problem-solving or enquiry. Importantly, it is not assumed that the skills and procedures of thinking are generic to all situations, or exclusive to one group of children in contrast to another. It is the specific

nature of what individuals do when faced with a problem, the means adopted to achieve given goals within the confines of a given situation, which holds interest. There have been few attempts to research or apply these important ideas from socio-interactive encounters to the learning needs of children with visual impairments.

Scaffolding is closely linked to the idea that adults and other learning partners can frequently help children to accomplish things which they could not do by themselves. The gap between what children can do on their own and what they can achieve with the help of others more skilled than themselves, is known as the 'zone of proximal development' (Vygotsky, 1978). In other words, adult sensitivity to the needs of the learner and the nature of the task in hand, enables children to understand problems and find solutions in situations where, left to their own devices, they would be over stretched.

Social encounters between adults and children are therefore essential for children to learn about the world they live in. This is even more important for a child with visual impairments as the opportunities for incidental learning may be reduced due to the difficulty in accessing visual information. However, all disabilities, particularly sensory impairments, disturb adult-child interactions (Webster and Wood, 1989). Most of the processes of early social interaction depend to some extent on vision. Scaffolding accounts for the frameworks of joint reference which adults construct as a basis for shared attention and meaning-making, but these too require the reading of visual clues.

Later, these prototypes for communication support conversational exchanges (Schaffer, 1992). In accounting for what promotes rapid development towards more mature language use, it is the quality and processes of adult scaffolding which are instrumental for most children.

There are some children, however, who are hard to scaffold (Conti-Ramsden, 1994; Meadows, 1996). Learning difficulties and sensory-impairments, in particular, seem to evoke more intrusive, managerial parenting styles. Children with visual impairments may be denied opportunities for exploration, collaborative play or risk-taking, due to adult over-protection. Some adults 'over-scaffold' children with visual losses, for example, by initiating many more conversation topics, asking many more questions than usual, and requesting more actions. Instead of offering rich descriptions and interpretations to blind children, research shows that adults tend to adopt strategies which limit language interaction and cognitive development (Andersen, Dunlea and Kekelis, 1993).

In order to facilitate learning and development, parents may have to recreate more effective patterns of interaction with their children. This will depend to a great extent on the ability of the parent to tune in to the perceptual world of the infant, to make responses contingent on what the child is attending to, in terms of visual or auditory events, and to find effective ways for the child to make sense of everyday experience. Most recent accounts on how to promote development in children with vision impairments, written by practitioners in the field, acknowledge the importance of adult bridging or interpretation of the child's immediate environment and their place within it. However, this is still a relatively underdeveloped field of enquiry in relation to sensory impairment (Recchia, 1997a; Bozic, 1997).

Between children themselves, early social interactions begin by watching one another, and the mutual showing or sharing of objects and toys. Peer interactions and peer scaffolding may also be disturbed by loss of vision. A blind child may be unaware of the efforts of a sighted peer to invite interest in a toy or participation in a game, if these are based on gestures or visual signals. Difficulties arise

when the child with a visual impairment fails to react in the expected way. It becomes easier for everybody when language is used to establish social interaction. However, all young children find it hard to understand the world from another's viewpoint, especially the fact that a playmate cannot see. Young children's language often lacks semantic specificity and depends on the context for interpretation. Awkward moments can follow when a sighted child points to a coveted object and says to a blind play partner: 'I want that one'. The simple presence of peers may not be enough for the child with a visual impairment to join in social encounters with peers. Effective social enterprise may have to be mediated and stimulated directly by adults.

1.2 Focus of the present study

The present study focuses on aspects of social interaction, play and language of children with visual impairments in mainstream schools from a socio-constructive perspective. This project was intended to provide ideas and guidelines for how to promote opportunities for better social interaction between children. So that teachers could relate this research to their own classroom experience it was decided to concentrate on a wide range of children with visual impairments likely to be found in mainstream schools, rather than a highly selective group.

In doing so, I intend to look at children, teachers or other adults in authentic home or school settings, accepting that the conditions and environments in which people live, play and work, are normally unpredictable, typically messy, often fraught, always complex. The real challenge for the researcher in these social contexts is to find ways of capturing relevant data without oversimplifying, and

keeping in mind the intricate dynamics and organisation of family or classroom life.

Second, I intend to examine aspects of interaction between children and peers, or children and adults. This approach stems partly from recent attempts to study teaching and learning as socially-mediated activity or 'guided participation' (Wood, 1988; Moll, 1990; Rogoff, 1990; John-Steiner et al, 1994). A key idea is that adults or more experienced partners frequently help children to accomplish things which they could not do by themselves. Similarly, what adults assist children to achieve collaboratively, prepares children for more independent enquiry in the future. Through social interaction with the more mature, children are exposed to practices and examples of how others tackle problems and manage their thinking.

I also intend to highlight those elements of the learning environment, or interactions around a learning focus, which most effectively promote development. The idea is to point to the most effective ways in which adults may 'scaffold' or support aspects of children's development: how children are introduced to tasks, how adults organise the environment to promote interaction between children, how adults stimulate children to express their feelings and share ideas, etc.

The point of capture for interactive moments between adults, children and peers in the study will be play encounters in play group or school settings. Recent accounts of sighted children observed at play (Smith and Cowie, 1988; Moyles, 1989; Garvey, 1990; Dunn, 1988, 1993; First, 1994; Bergman and Lefcourt, 1994; McCune, DiPane, Fireoved and Fleck, 1994) provide a rich source of evidence about ways in which children explore their physical and social environments, develop games, routines and roles, and create social networks

which are inclusive or exclusive of play participants. During play, children have the opportunity to experiment with the meanings and rules of real life. They learn how to take alternative perspectives and practise making their intentions clear to others. Playing with others requires a flexible repertoire of social skills. Children are more likely to get what they want from a play situation if they are able to express themselves, if they can negotiate and agree on how the ingredients for a play context should be assembled.

Very few studies have gathered information on play or social encounters of children with visual impairments in their natural settings (see for example, Ferguson and Buultjens, 1995; Kekelis and Sacks, 1992; or Preisler, 1993). These authors developed descriptive studies which focused on social interaction of children with visual impairments and their peers. However, they based their results on a selective group of children with a very particular condition and/or on small samples. These studies always mention the need for more substantial research in this area.

Apart from the studies mentioned above and almost without exception, research in this area has focused on children playing alone, in the presence of a caretaker or with parents (Tait, 1972a; Parsons, 1986a, 1986b). Such research has mainly been conducted in contrived settings which are not typical of real mainstream classrooms. This work has given us some insight into what children do in experimental situations, but these findings can only partly be applied to other contexts. In authentic settings, children with visual losses have to contend with busy, challenging situations where unpredictable events occur, and which may involve fleeting contacts with other children, who may take toys away, and with whom a child has to deal.

In the present study I observed children - sighted and with vision impairment - playing in their natural settings. I also explored more controlled situations, such as pairs of children working together to perform a task, and children playing at home with their siblings. In each case the objectives were to identify factors which foster social interaction, to examine the characteristics of children which influence their social involvement, and to explore the impact of different contexts on children's social encounters.

1.3 Theoretical questions

By focusing on aspects of social interaction, play and language of children with visual impairments in mainstream schools I intend to answer and explore questions concerning the quality of social experience of these children. At a time when there is a movement towards including as many children with special educational needs as possible in mainstream schools in accordance with the Code of Practice (DfE, 1994) and with the Green Paper "Excellence for All Children", (DfEE, 1997) it is of paramount importance to analyse the effects of inclusion policies on the adults and children involved, especially as mainstream class teachers are required to have a greater responsibility for special educational needs. This has been a concern for a number of authors (see for example Hepler, 1994, who asked à propos of including children with special educational needs in ordinary school contexts 'Have we improved their social environment?).

Inclusion can have a positive influence on children's development. Peers play an important role in the development of self-concept of any child. The opportunity to interact socially with others in the real world allows the child with visual impairments to gather information and play an active role in everyday

situations, preparing the child to become a full member of society (Erwin, 1991).

Nevertheless, as Hegarty (1982, in Allan, 1994) mentioned, physical proximity on its own does not necessarily promote meaningful social interaction and teachers play an important role in removing obstacles which can limit the opportunities to interact with others and in directly promoting social interaction through schemes such as peer tutoring. However, from case studies carried out in the UK it has been found that few direct attempts were made by adults to promote social interaction between children with special educational needs and their peers (Allan, 1994).

On the other hand, the recent economic and political developments leaves inclusion of pupils with special educational needs in a difficult position. Pupils with special educational needs do not usually add to the "marketability" of a school, for example in league tables of academic results and therefore, these pupils do not fit with a climate of competition between schools. Therefore, some researchers (for example Lee, 1992 in Allan, 1994) take the viewpoint that children with special educational needs would be better off in special environments where the teacher/pupil ratio is lower and where more funding and specialist staff is available.

Another issue that is important when considering educational placement of children with visual impairments is the access to an appropriate curriculum. Case studies carried out in England and Wales (Allan, 1994) refer to the increasing pressure on teachers with the introduction of the National Curriculum, mainly due to the pace of progression of the attainment targets.

Usually, children with visual impairments have an endless list of specific skills to learn including those related to mobility, Braille, use of technology and visual aids, self help skills, etc. All of these skills are time-consuming to teach and it may be difficult to achieve a good balance between being involved in academic tasks and having the opportunity to interact with peers. Of course, these specific skills are also learnt during social encounters but usually with adults. Therefore, in the present study I wanted to concentrate on situations when children with visual impairments have the opportunity to interact more freely with their peers and determine in terms of social interaction, what quality of experience children with visual impairments enjoy in mainstream schools.

Another major question reflects the impact that the context has on children's behaviour. How do different physical and social contexts influence the social experience of these children? What are the factors that determine if a situation is more or less likely to be successful in terms of social interaction with peers?

I also intend to observe children in more structured activities while working in pairs. Azmitia (1988) observed children working in pairs and concluded that the less experienced children gained from interacting with more experienced partners and that this gain was mediated by the quality of verbal interaction.

Finally, the study will address the question of how the social experience of children with visual impairment in mainstream can be improved. The identification of factors from the social and physical contexts should certainly provide helpful guidelines to improve these experiences, but it is important to be open to other issues that may appear of interest later on in the study.

The idea is to move away from deficit models which speculate on the nature and extent of distinctions between children with and without visual impairments.

Instead the aim is to identify contextual factors which promote social interaction between children in mainstream settings. Whenever there is an attempt to facilitate social interaction in mainstream settings, special attention is given to contextual factors and usually it involves a careful planning of activities, materials, space and strategies used by teachers (Hundert and Houghton, 1992). Some recent studies (Kekelis and Sacks, 1992) refer to the influence of contextual factors on children's ability to participate in classroom activities and interact with peers. Some of these factors are concerned with the number and characteristics of peers, others concerned with the activities used, but again the way in which specialist and mainstream staff work together is of paramount importance.

In summary, the present research is based on the following research questions:

1. What quality of social interaction during play is experienced by children with visual impairments in mainstream schools?

2. How do different physical and social contexts influence the social experience of children with visual impairments?

3. What do children with visual impairments experience when working in pairs on a pre-determined task?

4. How can we improve social experiences of children with visual impairments in mainstream schools?

From these questions some focuses of research and more specific hypotheses were set from the beginning of the research, namely:

- Social interaction between children with visual impairments and their peers or adults are faced with obstacles.

- Children with visual impairments experience a variety of obstacles to social interaction which are not determined exclusively by within child factors. Contextual factors play a major role in promoting social interaction.

- Children with visual impairments will seek interaction with adults as they are more effective in mediating the child's physical and social environment.

- Peers and adults will have difficulties when interacting with the child with visual impairments to perform a task together and successfully.

- When performing a task together, adults will adapt and scaffold the child's activity more effectively than peers.

Throughout the study there were other hypotheses or focuses of analysis which emerged from the data. These are:

- Strategies used by adults and sighted children have a significant impact on the quality of interactions with children with visual impairments.

- Children with visual impairments are faced with obstacles when trying to solve conflict situations.

- When children with visual impairments are used as a resource, the requests made to them tend to focus on the child's own activity, wishes or feelings.

- The age and degree of visual impairment of a child are factors that influence the presence of an adult.

- The age and degree of visual impairment of a child are factors that influence the control of activity of and by others.

- The age and degree of visual impairment of a child are factors that influence the use of others as a resource or being used as a resource by others.

- Pretend play situations pose difficulties to children with severe visual impairment.

Basically, I intend to apply recent models from socio-interactive encounters which take a perspective that children's development is embedded in the context of social relationships to the case of children with visual impairments. This is extremely important as the analysis focuses on the overall contextual situation and aims to find out how this situation influences the child's behaviour and learning opportunities. This will certainly be of much interest to educators and parents and moves our research knowledge for children with vision impairments into new domains with important implications for practical intervention.

1.4 Objectives

The following objectives were set for this study:

- To describe play and social interaction presented by children with visual impairments in mainstream schools in encounters with adults and peers.

- To describe the use of language by children with visual impairments as a means to social interaction in encounters with adults and peers.

- To identify factors that foster social interaction and the development of relationships.

- To identify possible correlations between the characteristics of children with visual impairments and the quality of interaction enjoyed with peers or adults.

- To explore the effect of different contexts on children's social interactions, in particular the strategies adopted by adults in promoting social encounters.

- To identify areas that need further research.

1.5 Methodological issues

It was intended to observe social interactions when children were not following adults' instructions or pursuing an academic objective, but when they were involved in what is frequently called "choosing time". However, other exploratory studies were also carried out, including a study in which children were observed while playing with a partner in more structured sessions in school.

It is important that research developed in this area can be transferred to educational practice. In the area of social interaction presented by children with visual impairment in mainstream schools it is vital that these children are observed in their natural environment.

Warren (1984) expressed the need for research into the dynamics of integration of children who are blind in different social settings. There has been a new trend to more ethnographic and qualitative research in studying social interaction. As Erwin (1991, page 258) noted: "Qualitative data would be extremely valuable in describing how young visually impaired students interact with others in both specialised and integrated programs." As the number of children with visual impairments is small, researchers from workshops sponsored by the Mary Kitzinger Trust (Workshop reports, 1990) also refer to the advantages of using more ethnographic methods without recourse to tight controls in order to be able to integrate information from different settings.

Ethnography can be defined as an in-depth analytical description of an intact cultural scene (Borg and Gall, 1983). Ethnography tends to be inductive, i.e. the researcher tries to find a theory that explains the data; to be generative, i.e.

tries to discover constructs using the data as evidence; to analyse subjective data and to be a process of abstraction in which units of analysis emerge during the observation and descriptions made (Goetz and LeCompte, 1984; Woods, 1988; Robson, 1993; Atkinson and Hammersley, 1994; Scott and Usher, 1996; Brown and Dowling, 1998).

It is also important that the methodology used takes account of children's individual differences and in the case of children with visual impairment, these differences are remarkable. This group of children presents such a variety and complexity of conditions that it is dangerous to consider all of them as similar. The only thing they have in common is the presence of a visual impairment. This has also been one of the difficulties when trying to match these children to control groups with the further difficulty of finding similar tasks for the two groups of children (with visual impairments and control).

If we want to develop research that is important for educational practice we have to accept the fact that this extreme range of individual differences exists in any population (or small sample) of children with visual impairment. When teachers are consulted about a child with visual impairment in their class, they may have stereotypical expectations of a blind child with no additional difficulties. However, this is unlikely to be the case. Therefore, in this research the variety of conditions and individual differences must be considered.

In the present study a multi-method approach was used. Some hypotheses were set prior to data collection while others emerged from the data, and some data was analysed qualitatively while other data was analysed quantitatively. To some extent, the study can be described as naturalistic and ethnographic in the way that children were observed in their natural settings with no attempt to control what happens in the observed situation and by the researcher taking a role of

observer-as-participant, i.e. in this case the researcher makes close and detailed observations of the phenomena without trying to experience the activities him or herself (Scott and Usher, 1996; Brown and Dowling, 1998). In addition, qualitative methods were used. This included a recursive data processing strategy which was used throughout the study and which is another characteristic of ethnography (Goetz and LeCompte, 1984). This means data are analysed throughout the study and can be analysed again and again in order to analyse occurrences of a particular aspect of social interaction. This was used when focusing on different aspects of the interaction and to identify obstacles or solutions to them. Recursive analysis was carried out to identify factors that promote social interaction, describe play, conflict situations and social functions of different behaviours observed. Another aspect that characterises the study as ethnographic and naturalistic is the fact that some hypotheses or focuses of analysis emerged from the data.

On the other hand, quantitative methods were used to describe time spent in different forms of play and levels of interaction and correlational statistics were developed to identify relationships between the children's characteristics and the social contexts and behaviours presented.

An observation framework was developed taking into account the importance of socio-interactive encounters in the immediate and real world experienced by children with visual impairments. This framework was used for both quantitative and qualitative research.

There are some advantages and disadvantages in taking such an approach. On the one hand, by using qualitative research I intended to analyse the social experiences of children with visual impairments in their socially complex and messy natural settings. Some previous studies (Parsons, 1986b) looked at these

children's behaviours in laboratories in the presence of a set of toys and an adult. Such studies tell us what children with visual impairments do in that particular situation but they do not tell us much about what children would do in a setting where there are many other children talking, moving around, bringing and taking toys away, etc. The idea was to concentrate on what really happens in a variety of classrooms, looking at its complexity and accepting it as a poorly controlled situation. The outcomes of this research take into account real settings and the transfer from research outcomes to educational practice can be more easily achieved (Scherman and Webb, 1988; Scott and Usher, 1996; Brown and Dowling, 1998).

On the other hand, trying to make sense of complex and messy situations using a qualitative approach has the danger of becoming overloaded with data and it is also very time consuming (Dey, 1993). Given the low numbers of children with visual impairments for research subjects, it is much more effective to adopt a research strategy which provides in depth data on fewer cases. Another problem is that using observation techniques is also time consuming and poses the difficulty of trying not to have an effect on what is being observed (Robson, 1993). This is mitigated to some extent by the observer not being "visible" to many children with severe visual impairment.

1.6 Outline of the study

In the initial phase of this study, four Local Educational Authorities were contacted in order to identify possible children who could participate in the research. Preparatory work with the school and staff took place before the data collection was carried out.

Before the main study started, a pilot project was undertaken with a small selection of children. Six children participated at this stage, four of them were observed in the playground for three sessions of fifteen minutes. The other two children were observed indoors in their usual school settings, in what teachers called either 'free choice' or 'choosing time' for eight sessions. Agreement was reached with the class teacher about which sessions would be observed and the procedures explained. These sessions were filmed in order to iron out any practical difficulties with the observation procedures and also to refine the observation framework. As much as possible the observer tried not to disturb the normal activities of the classgroups.

Once authorisation was given and timetables were set out, children with visual impairments were observed in their natural settings during three play sessions of fifteen minutes. Observations were made at the time when play sessions usually occurred. In all, twenty children were selected for the main study and a total of 15 hours of film was videotaped. A total of eleven months was spent in data collection.

A range of information was gathered about each target child from parents, using a short questionnaire, and drawing on teachers' perceptions. Informal conversations with teachers and general assistants and other observations (occasionally the observer had to wait in the classroom and watched children informally) also occurred and notes of these sessions were made. For each of the sample of children with visual impairments, data were collected from video and radio-microphone recordings, together with information from parents, teachers and assistants.

Two of the three sessions filmed for each child were selected randomly, leaving a total of ten hours of film to be coded and analysed. The coding process started

before all the data were collected. Altogether, coding and analysing data went on for a period of twenty one months. A ten-second time-sampling technique was used which made it possible to determine how much time target children spent on their own, next to, or interacting with others, and how much time they spent in different categories of play. A descriptive analysis of this was then carried out, using a framework of play and level of interaction categories, which analysed the proportion of time spent by different children in various levels of interaction and kinds of play, such as role play in the home corner, or building with construction materials. This framework was based on the work of Parten (1932, in Faulkner, 1995).

Inter-observer reliability concerning the level of interaction and form of play categories was confirmed by using Fleiss's Kappa - nominal scale agreement (Fleiss, 1971). Eleven observers watched an extract of a total of three minutes of video. Three of these observers also watched a longer extract of twenty four and a half minutes of video. Both general agreement and agreement for each particular observation category was found to be over 90% for all the categories ($p<.001$).

The observation framework was thus considered to be a highly reliable instrument which yielded closely similar findings amongst several independent raters, and therefore adopted for use in the study.

Transcripts of the sessions were made and a framework was used to code different categories of social function, focusing on attentional behaviour (actively initiating attention from adults or peers, or responding to attention-seeking behaviour); resources (getting help, giving information, providing play objects to others); and activity control (controlling or being managed by others). These categories were based on the work of Guralnick and Groom (1987). Parts of

these transcripts were selected to analyse specific events such as conflict situations.

Inter-observer reliability (Fleiss, 1971) concerning the social function categories was confirmed by using ten different extracts from transcripts. Four different observers analysed the extracts and general agreement was found to be over 90% ($p<.001$).

Correlational techniques were used to analyse the relationship between degree of visual impairment or age of the child and time spent in different social functions with adults or peers, use of resources, and how activities were managed or controlled.

Descriptions were also made which focused on the physical environment; play features such as resources, toys and objects; the group of children present in the vicinity; and the quality of conversational interaction.

Pretend play was also analysed by describing the play scene focusing on the type of pretend play presented, the level of participation and role of the child and of the adult, difficulties observed and factors that promoted play.

The data from transcripts and descriptions were analysed from different perspectives, focusing on the contexts observed, the content of play activities, and typical characteristics of the social interactions established. I was also able to pin-point particular difficulties or strategies adopted for their solution.

This provided the necessary information to describe the experiences that children with visual impairments have in the situations observed, to identify which factors foster better social interaction and provide suggestions for the future.

2. Review of Literature

This chapter explores the background literature to the field of enquiry. I intend to describe current knowledge concerning the development of children with visual impairments and to make references to the new approach to children's development which takes into consideration the importance of social context. In doing so, I start by describing the importance of vision in key areas of children's development. Next, I refer to the importance of social encounters to children's development. Here the focus is on early social interaction, scaffolding, joint problem-solving and conflict.

One focus of the research is language development, which is an area of paramount importance in relation to optimising the developmental progress of children with visual impairments. Another focus of the research is play and the development of social interactions between children, which are areas that have an important role in relation to exploration of the physical and social environment. In both of these sections the emphasis is on how development occurs in these areas, what difficulties may appear for the child with visual impairment and what strategies can be useful for these children. Next, a section on integration issues follows. In this section policy issues and references to the latest research in this area are described. Finally, issues pertaining to the methodology used in this study are covered.

2.1 Vision and early child development

When analysing areas of development of children with visual impairments, it is important to understand the role that vision plays in development and what may represent an obstacle for children with visual impairments. This section is a summary of children's development when vision is affected.

There is no doubt that visual experience plays a major role both in enabling infants to make sense of their environment and in enabling caregivers to introduce the child to the social contexts in which language and meaning are shared. From early infancy an intact visual system provides the necessary conditions to mediate sensory information. Even so, it is immature when compared to the visual system of adults (McGurk, 1979).

Infants are sensitive to a variety of sensory experiences and they respond selectively to different stimuli. From birth, babies turn towards a sound source played softly in one ear (Wertheimer, 1961, in Oates, 1987). Very quickly, newborn infants become able to discriminate their mother's voices from those of others (Oates, 1987). However, visual experience is very important and gives us a lot of information. By two weeks, babies are able to distinguish their mother's face from that of a stranger's (DeCasper and Fifer; 1980) and the simultaneous presence of faces and voices becomes very interesting for the infant (Rosenblith, 1992).

Vision plays a very important role as a source of information about objects, people and events and is an important incentive for the infant's exploration and meaning-making, the linking of words to objects, and the tying of concepts and categories to the environment (Dunlea, 1989).

Warren (1994) collated research evidence which suggests that in the absence of visual information, there are likely to be delays in a wide range of understandings about the physical world: object permanence (that objects continue to exist even when the sensory evidence has disappeared); causality (the effects of given actions on objects); time (ordering of events in sequence); properties of matter (continuity of properties such as number or volume despite changes to the appearance of things); space (how physical spaces are structured and occupied by objects, including the relationships between objects).

Vision is implicated in all areas of children's development as a co-ordinating and integrating sense. Uniquely, vision has the quality of simultaneity: we can process information from near and distant objects at the same time, and know how objects are positioned in relation to one another, and to the observer. Babies become aware of objects at different depths and they will grasp for the closest object in view (Granrud et al., 1984; Kellman and Spelke, 1983; in Butterworth, 1986). In contrast, although hearing gives clues with regard to distance and direction, our ears can only deal with auditory information arriving in sequence: a succession of events over a time span. The acquisition of sound-prehension co-ordination occurs later than the vision-prehension one, i.e. children first try to grasp an object that they see and later an object that they hear (Dunlea, 1989). This can be due to the fact that the existence of sound does not necessarily mean that a graspable object exists (Bigelow, 1986; Dunlea, 1989). It is because of the continuity and immediacy of vision in providing precise and detailed information about the environment, that vision can be characterised as a powerful driving force in early learning (Warren, 1994).

Touch is a very important source of information about the environment for children with visual impairments but there are many limitations to tactile perception. Touch requires children to search out objects, to travel to their

locations to discover their characteristics, and for objects to be within reach. Representations of objects through touch will require small fragments of information, acquired serially, to be put together to form an image of the whole.

Understanding cause-and-effect relationships is also more difficult to achieve without the use of visual information due to the fact that the child does not receive feedback information about what happened to the object that was acted upon. These children gain therefore from opportunities to act on objects that provide auditory or tactile feedback (Chen, 1993).

In terms of the conceptual development of infants with visual impairments, much has been made of the difficulties in establishing object permanence, which signals an important shift in understanding about the physical world 'outside oneself', and which is linked to vocabulary growth (Bigelow, 1986, 1990). Children who do not actively explore will be immature in their conceptual development: understanding what things are, how they work, differences and similarities between objects, how they may be categorised and classified.

The relevance of these collective research findings for the present study is that they highlight from the earliest stages of development that children with vision impairment have significant obstacles to overcome in gaining information from their environments and do not easily assimilate information incidentally or without direct assistance.

2.1.1 Adult bridging

In many respects, adults have an important role in making bridges between the child's inner world and the world outside, with language as the medium through

which this is brought about. By adding together impressions gained from touch, taste, smell and sound, sensory pictures can be constructed and recalled. The adult's explanations relate these images to prior experiences and other relevant reference points, extending the child's understanding in forms which are within the child's grasp.

Although adults have a very important role in providing information to children with visual impairments, much previous research has focused on observing these children in situations where they are not expected to interact with others (Parsons, 1986b) or in controlled settings with special equipment or toys (Tait, 1972a; Parsons, 1986b; Olson, 1983). One of the aspects focused upon in this present research is the adult's function in helping children with visual impairments to make sense of and participate actively in their natural settings.

2.2 The importance of social encounters

2.2.1 Social interaction and social understanding

From the beginning, humans are social beings. Depending on the culture and other social conventions, there are usually numerous opportunities to interact with parents, siblings, relatives and other children. The fact that most children come into the world already equipped with the ability to interact with other humans is not fortuitous. Recently, the importance of interaction in promoting cognitive and linguistic development in ordinary circumstances has been widely acknowledged. Many researchers have begun to view the child's thinking, learning and intelligence as socially-mediated behaviour: what the child can achieve with the assistance of others (Garton, 1992; John-Steiner et al, 1994; Light et al, 1991; Rogoff, 1990; Woodhead, et al, 1991). Although there has

been some research that looked at children with visual impairments in the presence of adults, this focused mainly on the characteristics of the children's behaviours rather than on the role of adults in those situations (Tait, 1972a; Rogers and Puchalski, 1984b; Recchia, 1987).

Early interactions between parents and their infants are characterised by pre-verbal communication and much of the patterning of such interaction depends on visually-based strategies. All of the following interactive processes depend to some extent on a visual component: obtaining an infant's attention; interest in faces and mutual gazing; looking away to signal disengagement; reciprocal imitation of gestures, actions and tongue movements; turning to locate a sound source; reading and interpreting a partner's intention; recognising familiar situations and events; extending and linking exploratory play from one object to another (Bates, Camaioni and Volterra, 1975; Bruner, 1986; Goldbart, 1988). The structure of rudimentary interactions, mutual sensitivity to the signals and intentions of partners (or 'intersubjectivity'), is obviously interrupted by a reduction of visual information.

Intersubjectivity develops from the natural context of child-adult interactions. In ordinary circumstances, young children are very quick in understanding what other people have in mind and organise their actions accordingly (Bruner, 1986). Establishing a synchronised attention to events and emotions and understanding them is such a natural experience that we often assume that it just happens (Recchia, 1997).

At this stage, normally developing children participate in co-ordinated actions with familiar partners in well known routines of interaction (Eckerman, 1993). It is by participating in these routines that infants discover that communicative intentions produce anticipated responses. Adults provide the

opportunity for the infant to listen and watch and join in at the right moment, and when the infant joins in the adult rewards him or her. In this way infants begin to anticipate the impact of their actions on the world.

Therefore, during these first 12 months of life, infants learn about their social world by interacting with people in everyday games and routines. This framework or patterning of interaction creates a context for socialisation, acquisition of communication skills, regulation of emotion and creation of the self system (Dunn, 1993). The cultural world in which children grow up and the early social experiences they establish with others has a profound effect on children's cognitive, emotional and language development (Rogoff, 1990; Preisler, 1991; Dunn, 1993).

Initially, infants do not have a sense of self distinct from their physical or social world. Through experience infants come to learn that they can act on their world, causing and controlling events and in doing so, they acquire information that helps develop a sense of self distinct from the rest of the world (Bretherton, McNew and Beeghly-Smith, 1981; Warren, 1994). This distinction of self from other, and of cause from effect marks the beginning of thinking as infants become able to anticipate the result of their actions (Wood, 1988).

In the process of emergence of their sense of self, children develop the understanding of their own existence by becoming aware of their power to act on the outside world, of their distinctiveness from others, of the continuity of their own identity and of their own awareness (Miell, 1995).

This is a gradual process which shifts from children becoming aware of themselves by acting on their physical world and by watching others doing the

same, to a more elaborated understanding of their own characteristics and of others' perceptions of them.

Intersubjectivity plays an important role for the development of other competencies such as language and social cognition (Recchia, 1997). In language use, achieving such intersubjectivity shows an organisation of children's minds which develops from experience rather than from learning processes. This comes very naturally showing that what poses difficulties to children is not understanding other's perspectives but rather to understand certain situations and contexts of which they have no prior experience (Bruner, 1986).

The relevance of this line of research of development in ordinary circumstances, is that in the case of children with visual impairments, language plays an amplified role in allowing children to achieve reciprocal communicative interactions with adults and in overcoming their initial difficulty in developing intersubjectivity (Recchia, 1997). However, this initial difficulty in turn may have interfered with language development.

Social interaction with more experienced partners allows children to acquire skills that they will internalise and use independently in the future. This notion builds on the idea that what children can achieve today with the assistance of more experienced partners they will be able to achieve tomorrow on their own (Bruner, 1985; Vygostky, 1978). However, it is important to understand that children are active in this process. Rogoff (1991) states that children's quick development into socialised participants in society is achieved due to a combination of children's skills and the assistance from more experienced partners. Children are active in seeking, structuring and demanding assistance from other members of the society. Therefore, children and adults have complementary roles that promote children's development (Rogoff, 1991).

Children's active participation in interaction with others promotes their own ability to communicate effectively. Although initially learning about participating may occur by taking part in routines, games and conversations initiated by adults, children are also learning about how to keep adults and peers involved in activities initiated by themselves (Shugar, 1993).

By having participated in a variety of experiences in social activities, children gain a repertoire of communicative skills and strategies. They also become able to select those skills and strategies that will be more effective. Therefore, children become able to organise their communicative behaviours differently, adjusting it to their partners and to the situation in which such behaviours occur (Bruner, 1985; Rogoff, 1990; Shugar, 1993).

This is achieved progressively through social participation. From birth children start communicating in a very rudimentary way (Bruner, 1985). Children express their discomfort by crying or screaming and therefore, demanding attention from their caregivers. On the other hand, adults try to interpret what the child is communicating and respond accordingly (Bretherton, McNew, Beeghly-Smith, in Oates 1987; Goldbart, 1988). While interacting with each other, adults attempt to identify what is already interesting or what would be interesting for the child in order to bring it to their focus of attention. Child and adult spend a lot of time observing each other's facial expressions, actions and directions of gaze.

During the second half of their first year of life, children begin to communicate intentionally by using conventional gestures which are occasionally accompanied by sounds as well, such as reaching for an object even when this object is out of reach, and looking at the person they want to communicate with as a way of

getting what they want (Bates, Camaioni and Volterra, 1975). Children have then the understanding that other people know and comprehend what they are trying to convey.

Therefore, by imputing a mental state to others, children are showing the beginnings of a theory of mind which at this stage is still rudimentary (Bretherton, McNew and Beeghly-Smith, 1981; Wood, 1988; Warren, 1994). Children would maybe be able to impute a certain mental state to others but not a variety of mental states. This would come later with experience (Bretherton, McNew and Beeghly-Smith, 1981).

Children also use gestures such as pointing in order to achieve joint attention with a partner (Goldbart, 1988). When the child seems to be interested in a particular object, the adult tends to speak to the child about that object, bring it closer so that the child can hold it, etc. The language spoken to children is tied to the context, i.e. to the 'here and now', with reference to visible objects and comments on on-going activities (Garton, 1992).

From eight months of age children begin to be able to obtain information from the direction in which adults point and gaze. Despite the fact that children during their first year are not accurate in adjusting their gaze when adults change the direction of their gaze, they can use contextual clues to regain joint attention (Rogoff, 1990). This shared attention helps bring the infant's experience into conjunction with language, emphasizing the relationship between speech sounds and events. This process has been called the 'triangle of reference' and forms the basis of the development of shared meanings and eventually, words (Webster and Wood, 1989).

By being treated as though they had intentions, well before the emergence of the first word, the baby is thus playing a part in communicative exchanges in which infants come to expect that things will happen as a result of their own actions. That is how adults and children play their complementary roles in social interaction. On the one hand, children follow the adults' focus of attention and get adults to engage their attention towards the children's own interests. On the other hand, adults obtain the children's focus of attention and direct it to something and also use the children's own focus of attention to interact with them.

Active interaction is essential for children's development, but for the children with visual impairments many of the cues which could stimulate this interaction are affected right from the beginning. Children with visual impairments rely even more on adults in order to develop and understand what is happening around them. However, adults often have difficulty understanding what the child is interested in and such difficulty may result in actually stopping stimulating the child. This can be due to the mismatch between the adults' means to foster exploration and learning and the child's means to access information (McGurck, 1983; Kekelis and Andersen, 1984; Recchia, 1997). The aim is to help children learn how to explore their environment independently so that they can learn about things and events and the rules that govern them (Fraidberg, 1977). Children can only be motivated to interact actively if they are able to enjoy and control that interaction (Best, 1992).

There is no reason to believe that babies who are born blind, or with severe visual impairments, are any less prepared than other infants to socialise, explore their surroundings, seek out regularities and respond selectively to the adults' touches or sounds (Tobin, 1993). But conditions must be right for this potential to be realised. One of the early hazards that families of a child with a visual impairment must overcome, is the barrier to social interaction: the

initiating and maintaining of early exchanges which introduce the child to the social contexts out of which language and problem-solving themselves emerge. How children with visual impairments overcome barriers to social interaction in the context of a classroom is an aspect that the present research intends to examine.

In some families, the problem of establishing eye contact with a baby with a severe visual impairment, leads to parents feeling that their child is unresponsive. Some infants with visual impairments do not smile or gurgle when picked up, as most babies do in response to being cuddled or a face coming into view. Rogers and Puchalski (1984) observed that when mothers and infants with visual impairment interacted, both partners presented difficulties. On the one hand, infants with visual impairment were less responsive and provided less positive cues to their mothers, they also seem to request less attention from their mothers. On the other hand, mothers of infants with visual impairment were less vocally positive and showed less positive responses to the infant's social initiations. Babies who quieten and still when being touched or hearing a voice, may be more difficult to engage with in the early stages (Preisler, 1991). However, parents can usually find other forms of contact to stimulate social interaction, and observe ways other than facial expression through which the child anticipates being picked up or enjoys the mother's attentions, such as arm or leg movements.

Preisler (1991) observed that five-month-old babies with no vision paid attention to their mothers and enjoyed singing, playing and imitating their mothers. Later on, between six and nine months of age, when objects were introduced into play, infants who are blind did not use gestures such as pointing, showing and giving etc. which limits the opportunity for referring to external events (Preisler, 1997). This in turn discourages adults from initiating

activities or making reference to external events. A number of authors have found that sighted adults often have difficulty in establishing what interests the child and therefore provide less stimulation and more directives to children with visual impairments (Urwin, 1983; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). The importance of these collected research findings to the present study is that they inform a major research hypothesis, namely that adults, from the outset, have great difficulties in establishing positive social interactions with children with vision impairments because of factors such as reading the child's focus of interest, overcoming lack of social responsiveness, lack of intentionality, expressiveness or emotionality.

Preisler (1997) found that blind children begin to show a growing awareness of themselves from around nine months of age. They begin to understand that experiences can be shared with others and they express their intentions and wishes by moving their bodies and vocalising. However, these expressions are not accompanied by the same clues given by a sighted child. Caregivers' facial expressions, postures and actions are not accessible to the child with a severe visual impairment, and the child in turn does not express emotions and intentions in an expected way to the normally-sighted caregiver. Therefore, the understanding of each other's emotions and intentions is not as easily achieved in the dyad of child with a visual impairment and sighted caregiver (Warren, 1994; Preisler, 1997).

2.2.2 Overcoming obstacles to social interaction

Tobin (1993) provides an illustration of how a child, aged 12 months and blind from birth, engages in social interaction whilst sitting on her parent's knee. Ruth begins to scratch the rough fabric of the armchair whilst her mother is

being interviewed. The mother reciprocates and a dialogue of scratching proceeds. The incident reported by Tobin shows that vision is not an essential requirement for all of these early foundations of communicative exchanges. However, vision does contribute towards the spontaneity, ease and frequency with which these exchanges take place.

Another important aspect to consider in the dyad of child with visual impairment and sighted caregiver is the inner emotional state of the caregiver. This emotional state is part of the relationship between caregiver and child and the effects it has on the future of the relationship depends on individual responses and adaptability to the situation and on the support received by professionals (Preisler, 1997).

It may seem reasonable to expect that shared attention and joint reference are much harder to establish with infants with visual impairments. In situations where a child is unable to use visual information, adults cannot always interpret the focus of attention from the child's direction of gaze. If a blind child stills as a signal of interest in some new stimulus, it is much harder to infer what might be the source of arousal, or to interpret the child's line of thought. Pointing or reaching may be absent, although blind children do gesture. Adults may find it much more difficult to read the infant's cues, intentions and preoccupations, to draw inferences about what is being looked at, imagined or felt, and to put into words that which is of apparent interest to the child (Recchia, 1997, Preisler, 1991, 1997). Therefore, adults may find children with visual impairment hard to scaffold (Meadows, 1996).

Often the presence of a visual impairment brings out a more directive approach from caregivers. Therefore, the child with a visual impairment is more exposed to directives which often focus on the child's own activity and have less

opportunities to receive input from external referents and to share feelings and thoughts with others (Kekelis and Andersen, 1984; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). Children who are blind are not able to see others and it is complicated to gain an understanding of others if they do not share their feelings and thoughts with the child either (Preisler, 1997).

In ordinary circumstances and at the end of the second year, a more elaborated theory of mind begins to emerge. Children are able to make reference to self and others by personal names, to use pronouns and to speak about internal states experienced by themselves and by others and they enquire about the way people behave (Bretherton, McNew and Beeghly-Smith, 1981; Dunn, 1993). The child has now a verbally expressive theory of mind.

The emergence of a sense of self in the presence of a visual impairment means that children may need to overcome some difficulties due to the fact that their access to information from their environment is restricted, they do not have the same opportunities for spontaneous stimulation from the environment and it is more complicated for them to appreciate the effects of their own actions on objects (Warren, 1994; Hendrickson, 1997).

Eckerman (1993) observed that towards the end of the second year of age, sighted toddlers showed impressive changes in their abilities to respond in a co-ordinated manner both when interacting with another toddler or with an adult. The most frequent way toddlers responded in a co-ordinated manner was "to imitate their partners non-verbal play actions" (Eckerman, 1993).

From about two years of age sighted children begin to use verbal behaviour to regulate non-verbal co-ordinated action and at this stage children have a joint understanding of the theme of interaction (Howes, 1988). It is then that we can

observe the emergence of co-operative social pretend play. To participate in such play children need to have a repertoire of social behaviours and cognitive skills, they have to be willing to share, co-operate and compromise on the topic of play.

However, in ordinary circumstances these early social interactions between children rely heavily on information acquired through vision. One-year-olds spent as much as 24% of the time in the presence of a peer just looking (Lewis et al., 1975). Children begin by watching each other, showing or sharing objects with one another or gesturing at each other. Obviously, this can pose many difficulties for children with visual impairments.

From two to three years of age, sighted children are already developing an elaborated understanding of their basic characteristics, such as what they look like, their names, gender, etc and about their world - members of their family, pets, home, etc. However, children still need to develop their understanding about themselves and about what others think and feel in order to become fully competent members of the social world (Dunn, 1993; Miell, 1995).

The way children interact develops with age from a stage when children mainly watch each other and show or give objects; passing through a stage when children begin to share activities but without an organised cooperation, to a stage when children cooperate with each other and are more aware of the other's feelings (Howes, 1988, Eckerman, 1993).

When playing with objects, children can use them as a way of establishing social interaction, which is very common during the second year of life. Sharing objects is also closely related to the first verbal communications among peers (Howes, 1988, Garvey, 1990). Possession of objects becomes a motive of

interest for children and thus a motive to initiate interaction with other children (Lewis et al., 1975; Hartup, 1983, 1992; Garvey, 1990).

Imitative acts are frequently used by toddlers as opening moves to engage with others. To imitate their partners' non-verbal play action is the most frequent way of toddlers forming a co-ordinated response in non-ritualised play with their partners (Eckerman, 1993).

Because early social interactions between children begin by watching each other, showing or sharing objects with one another, children with visual impairments are at a disadvantage. They cannot receive information about their peer in the same way and they cannot look for an object if they do not know whether it is present or not in the environment to share with another child. Therefore, educational settings attended by children with visual impairments must take into consideration the needs of these children and offer an environment which can more directly promote interaction between children.

Sighted three-year-olds begin to have a social knowledge of the peer group and they differentiate friends from playmates. From then on, children share activities, they ask and answer questions, they give explanations, etc. At this stage, words begin to be part of the non-verbal co-ordinated action as children begin to imitate each other's verbalizations, to describe their non-verbal actions and to verbally control the non-verbal action (Eckerman, 1993). Although children enter a world of narratives and can tell the story of their lives (Preisler, 1997), when they interact with peers children can talk a lot between themselves but their speech is characterised by incomplete sentences and its construction is simpler than when they talk with adults (Lisina, 1985). Children continue to try to attract attention to themselves but they also pay a lot

of attention to their peers' actions. At this stage children begin to feel hurt by the actions of their peers.

During the pre-school years, children develop their understanding of the links between people's behaviour and their intentions and wishes, they also begin to make reference to social rules and expectations (Wellman, 1990; Dunn, 1993).

Preisler (1997) found that blind children began to show traces of a narrative self by the age of four. At this stage blind children could discuss past, present and future events in conversation with adults. Not all parents of blind children expand and support their child's narratives. This is an important issue that will be revisited when research on the language environment of blind children is considered later in this section. Instead they concentrate on naming or labelling objects. When playing and interacting with peers, blind children may find it extremely difficult to know what is going on and often withdraw to the company of adults and try to keep their attention (Kekelis, 1992, Preisler, 1997).

To be competent when interacting socially with others, children need to have some understanding of others. Besides, interacting with caregivers is very different from interacting with other children. The relationship between caregiver and child is complementary but the two entities have a different role, while in a relationship between peers the children's role is reciprocal and of equal status. Adults can more easily understand the young child's perspective, try to guess what the child is trying to express and provide verbal information in an attempt to complement the child's efforts to communicate. Other young children are not as competent in understanding others' perspectives and in communicating their intentions and wishes.

Often, the first interactions that children establish with other children occurs between siblings. Sibling relationships are both complementary and reciprocal as one child is older and developmentally more advanced, but at the same time they are both children and can be equal partners. In ordinary circumstances children display a greater ability to understand their siblings than they do in other situations (Dunn, 1985). This level of understanding is displayed in the way they play and have conflicts together, whilst siblings who have frequent conflicts are those who are more likely to share, help and cooperate (Dunn, 1993). This also occurs between young children in pre-school settings (Hartup, 1992; Dunn, 1993). For children with visual impairments, the presence of an older sibling can be an advantage as children's opportunities to share their feelings and thoughts increase (Preisler, 1997).

When sighted children begin to have opportunities to interact with other children a whole new range of experiences come to their world. Children become able to exchange turns and roles and by around twenty four months of age they are ready to imitate other's play and to engage in invented games (Eckerman, 1993).

Peers play an important role in children's play and social contacts. Children interact more and present higher cognitive levels when they play with a child they like. Peer familiarity and gender identity are factors that influence the way peers interact (Rubin et al., 1983). The social interaction presented by toddlers becomes more complex as toddlers become familiar with each other (Kekelis, 1992). When in presence of a familiar peer, children present more co-operation, more pretend play and more positive social behaviours directed to the peer (Garvey, 1990). On the other hand, when with an unfamiliar peer children present more solitary activities and hardly become involved in pretend play at all. While interacting with each other, children can have the opportunity to experience situations that are difficult to experience with anybody else, such as

to cooperate, to share, to deal with conflict in a different way from when they interact with adults (Hartup, 1992). All these experiences are important for the child's social development.

As children interact more with a friend, these opportunities are more frequent if children build up friendships with others. Having friends is thus important for children's social development. Besides, once in school, children who make more friends tend to gain in school performance (Ladd, 1990). A rejected child has limited opportunities to cope with cooperation and conflict management. Even if a child is disliked by the majority of her or his peers but has one friend, he or she will have opportunities to have these experiences and learn from them (Hartup, 1992).

An important aspect when considering the development of social interaction between children is that in order to interact successfully with peers children need to use successful strategies for dealing with conflict, gaining entry to peer groups and responding to peer's verbal and non-verbal behaviour (Kekelis, 1992). In ordinary circumstances, popular children learn to change the subject, to give peers time to express their intentions, to be modest, to explain their viewpoint when they disagree with peers and to suggest alternative activities in order to cope with conflict. Children who solve conflicts with their peers continue the interaction after the conflict situation, while when children are submissive to their peers during conflict the interaction finishes (Kekelis, 1992).

Gaining entry to a peer group successfully is an important achievement for children. Children who are most effective in group entry use indirect means such as moving around the group, behaving like the members of the group or non-verbally joining the group (Kekelis, 1992). In doing so, these children gain

information about the group's interests, activities and goals. Children who are most successful determine a frame of reference common to the group members first and only then establish themselves as sharing in this frame of reference (Putallaz and Gottman, 1981). Children who are least successful in group entry tend to use direct strategies such as requesting access, asking questions, speaking about themselves and stating their own feelings. These children try to gain control and get attention to themselves rather than trying to integrate themselves to the ongoing conversation of the group (Putallaz and Gottman, 1981; Dodge, Schlunt, Schocken and Delugach, 1983; Kekelis, 1992).

The way children respond to their peers is also an important aspect that influences interaction between children. Children who listen to their peers are more likely to be responded to when they have a turn in the conversation. On the other hand, children who concentrate their speech on their own activities tend to be ignored. It is, therefore, extremely important that children learn to determine and respond to their peers' interests (Putallaz and Gottman, 1981).

Children's opportunities to interact with their peers are crucial for children's social understanding. These opportunities are also important due to the fact that a child who can create friendships and be socially competent with peers is more likely to be confident and to develop a positive self-concept.

As I mentioned above, in order to be popular children need to understand their peers' interests, activities and goals so that they can join in the group and respond appropriately. They also need to be quite skilled in dealing with conflict situations where again they need to understand others' expectations. Children with visual impairments need to overcome many obstacles to be able to achieve this. On the one hand, they have very limited information from their physical environment to be able to understand what their peers are doing. And the most

obvious strategy to gather that information is by asking questions, very probably a direct question which is one of the strategies used by non-popular children.

On the other hand, previous research has shown that when adults speak to children with visual impairment they tend to adopt a more directive communication style that is child-centred and very rarely do they talk about their own feelings, thoughts, intentions (Urwin, 1983; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). In such circumstances the child with a visual impairment is at disadvantage when trying to interact socially with peers. Preisler (1997) found that most ten-year-old blind children in her study did not have a friend and they described themselves as lonely children. These findings may obviously vary according to the support provided to both the child with visual impairment and the school he or she attends. How can we help these children learn strategies which prepare them to cope with these situations?

Besides, the presence of a sensory impairment may cause anxiety and defensiveness in a child's peers and this may prevent the natural initiation of social interaction between children (Hartup, 1983). However, these responses are often an initial reaction to something that is unknown and maybe even scary to other children. When children become familiar and have the opportunity to interact with each other, the presence of a visual impairment is not necessarily a factor that prevents social interaction between children. However, if a child with visual impairments does not have the necessary social skills, and social interaction is not an important issue for the teachers or other adults, interacting with others can become a difficult and unpleasant experience.

In summary, the significance of these research data on social understanding to the present study is considerable and again informs the hypothesis that we can expect interactions between children with visual impairment and their sighted

peers or adults to be restricted or unfulfilling - although the precise dynamics of this remain to be explored in natural social contexts. Although obstacles to social interaction are not inevitable, the precise nature of these social processes and difficulties remains to be specified for children with visual impairment in natural contexts. All of which are issues addressed in the current project.

These issues bring many questions to the context of a classroom attended by children with visual impairments in mainstream settings. There has been very little previous research developed with the aim of looking into what happens to children with visual impairments in real school settings, how inclusive arrangements for such children can be made to work more effectively.

2.2.3 Scaffolding

How do adults scaffold children with visual impairments? This is another issue that the present research intends to look into and provide guidelines. The importance given to scaffolding results from a shift in perspective in theories of children's development. We have moved from Piaget's theoretical accounts of changes in children's thinking - their role as individual 'scientists' or 'explorers' - to socio-constructivism which sees children's learning and thinking as embedded in social relationships (John-Steiner et al, 1994; Light et al, 1991; Rogoff, 1990; Wood, 1988; Woodhead, et al, 1991). Importantly, for promoting the development of children with visual impairment, these accounts have begun to analyse the nature of adults' scaffolding of children's thinking and enquiry. It is precisely the detail of adult-child encounters which has so far received little attention in the research literature for children with visual impairment and which the current study addresses.

Webster and Wood (1989) used a research framework which considers learning and development in relation to two major dimensions: the degree of engagement of the child in relation to a relatively active or passive environment. In this framework the vertical axis shows a continuum of adult's control within the learning environment, while the horizontal axis shows a continuum of the degree of initiative, engagement and active involvement of the child in the learning process. This framework aims to identify predominant kinds of teaching and learning and not to be a precise instrument. Four different quadrants emerge from this framework as seen in Table 2.1.

Active environment

A: Adult or peer driven Adults or peers manage and control Children are passive recipients Learning is the transmission of information Child is expected to respond to other people's interests and initiatives Engagement of child is low	D: Learning driven Adults negotiate and collaborate Children seen as active partners Learning is through guided participation Adults are sensitive to child's needs and perspectives Interaction is high in contingency
Passive child	Active child
B: Care driven Adults supervise and protect Children are discouraged from active exploration Learning is to be occupied but with low child initiative Few adults prompts or invitations Non-interactive styles	C: Child driven Adults provide resources when requested Children pursue own interests and initiatives Learning is through self-directed exploration and discovery Children manage their own learning Interaction is low in collaboration or contingency

Passive environment

Table 2.1 - A framework for adult-child interaction (Webster and Wood, 1989)

Quadrant D in this framework attempts to consider development in terms of a socially constructed activity which has its origins in socio-constructive approaches.

Socio-constructive approaches also have implications for understanding processes of teaching and learning in children with visual impairments in the real-time of social contexts such as the classroom. Essentially, they focus on the processes by which children's thinking and development are stretched in the immediate social contexts in which children are involved in different forms of joint problem solving or enquiry. Therefore, the focus is on what individuals do when faced with a problem, the means they adopt to achieve given goals within the confines of a given situation.

2.2.3.1 Adult's theory of the child

But what is it that adults do when they interact with children that actually helps them to develop? In fact, adults assist children by being sensitive to their level of understanding and providing clues that allow them to progress with some support until they are ready to take over responsibility. Rogoff (1991) refers to three activities used by adults to assist children. One way that adults assist children is by providing bridges between what children already know and what is new to the child. This helps children to find the connections between what they already know and what they need to know to handle a new situation. In doing so, adults refer to children's past experiences, provide models on how to behave in that situation, provide labels to classify objects and events, etc. This has not been explored in relation to children with visual impairments and it is a very interesting aspect to analyse as we do not know how adults discern the past experiences of a child with visual impairment.

2.2.3.2 Adult's theory of the task

Another strategy used by adults when trying to assist a child to solve a problem even unintentionally, is to select activities and materials that they find interesting and appropriate for that child. Adults select the level of difficulty of tasks that they think are appropriate for a child and this is therefore dependent on their expectation of that child. Children are active as well in this process as they express their preferences and therefore help adults to identify their particular interests. However, adults have a very important role in arranging situations and social environments that they consider appropriate. This is a very important aspect for children with visual impairments as the selection of materials and activities can determine the occurrence of active participation versus isolation. The present research will be looking at materials and activities selected by adults for children with visual impairments.

2.2.3.3 Adult's theory of support required

A third strategy used by adults to assist children is by progressively transferring responsibility to the child for managing a situation. This requires sensitivity from adults to assess at what point they can leave it to the child and at what point they need to carry on assisting the child so that frustration is avoided while the child is given sufficient responsibility to promote confidence. Again, children are active as well by arranging for participation at an appropriate level, they may express their wish to manage part of a situation independently or ask for help when finding it difficult. Again this is an aspect that the present

research attempts to examine and that has not been examined before for children with visual impairments.

Therefore, adults have a very important role in 'scaffolding' the child's management of situations. Wood, Bruner and Ross (1976, page 90) refer to scaffolding as consisting "essentially of the adult 'controlling' those elements of the task that are initially beyond the learner's capacity, thus permitting the child to concentrate upon and complete only those elements that are within his range of competence."

Scaffolding is a term used to describe tutorial behaviour that is contingent, collaborative and interactive (Garton, 1992). Scaffolding builds on the notion of the existence of a zone of proximal development by implying that the individual performance of the less experienced partner would be inferior to the performance achieved in collaboration with a more experienced partner.

Contingency is an essential part of scaffolding and it refers to the more experienced partners pacing the amount of help they provide to the less experienced partners. In doing so more experienced partners (1) intervene when their partners are having difficulty in following the task and maintaining interest and momentum or (2) hold back when their partners grasp part of the task and can therefore manage on their own. This allows the less experienced partner to take the initiative (Webster et al, 1996). This is extremely important for children with visual impairments as they need challenges and opportunities to take the initiative. However, adults may be much more managerial and directive when interacting with children with visual impairments which raises questions about how often these children are exposed to contingent partnerships (Andersen, Dunlea and Kekelis, 1993).

Wood *et al.* (1976) also describe six functions of the tutor (both adults or more experienced peers) assisting children in joint problem solving. One of the tutor functions is to recruit the child's interest in the task. Therefore, the child will adhere to the task as it was defined by the tutor and will focus on the relevant aspects of such a task. The tutor also reduces the number of steps necessary to manage a situation and therefore makes the situation as simple as required to allow the child to manage certain parts of the situation that are within the child's grasp. Another function of the tutor is to maintain the child focused on an overall objective to be achieved, but to allow the child to concentrate on the steps required to handle subgoals of the situation. In doing so the tutor motivates the child and directs his or her activity, maintaining the focus towards the overall objective.

Tutors also accentuate certain aspects of a situation that are especially relevant and help the child find the discrepancies between what he or she tried to achieve and what would be the ideal achievement. Tutors also control the level of frustration by adjusting their level of assistance to the difficulties encountered by the child. Tutors also demonstrate the tasks.

By assisting children in managing a problem, adults create a supported situation that allows children to develop their skills and knowledge to a higher level of competence (Rogoff, 1990). With an increase in familiarity with the task and with age, children take more responsibility for handling situations. This requires the adult to be sensitive to the level of child's competence in certain tasks so that the transfer of responsibility can be effective, including the understanding within the task itself, i.e. what skills and knowledge are necessary to handle the task independently, and the understanding of the child's ability to perform such a task.

Adults and children have complementary roles in adjusting the level of assistance provided by the adult and responsibility taken by each partner. On the one hand the adult limits the level of responsibility so that the child can achieve success, on the other hand, the child requests an interesting role in such an activity but within his or her zone of proximal development (Rogoff, 1990). In a way, children help the adult assessing how much support is necessary by clarifying in which areas they can have more responsibility and which areas they need more support.

The complementary roles between child and adult are very important for the child with visual impairments. Adults have to be very sensitive to the child's attempts to communicate when they can manage parts of a situation or problem on their own as well as providing challenges to the child. This adjustment of the level of assistance is crucial in order to allow children with visual impairments to take responsibility in the management of situations and problems, whilst still allowing them to have the necessary assistance to maintain the overall objective of the task and avoid frustration.

However, a lot of sensitivity in guided participation is not necessarily essential, some lack of sensitivity may actually be challenging to the child. Nevertheless, a minimal understanding and familiarity is necessary so that both partners can establish a common ground for communication and understand the interests, objectives and skills that can be expected from each other (Rogoff, 1990). Wood (1989, in Garton, 1992) observed cognitive gains when deaf children worked with tutors who were sensitive and who responded contingently to the children. This implies that the presence of cognitive delays is likely to be a result of inappropriate social interaction. The wish to help the child results in "over-scaffolding" which limits language and cognitive development.

In the case of children with visual impairments, adults need to be aware of the children's particular needs so that they can be sensitive and respond contingently to the children. Very often, children with visual impairments may experience frustration and assistance from adults can help them to feel that they can manage certain tasks that they would find difficult otherwise. However, it is important that adults keep in mind that children need challenges and therefore they need to transfer responsibility to the child in small steps. Although children are active in clarifying which areas they can manage on their own, children with visual impairments can be denied the opportunity due to overprotection and adult expectations.

To date there has not been any research looking into how adults attempt to scaffold children with visual impairments. How do they select activities, how do they break tasks into small steps, how do they maintain the child focused on the task, what are their expectations of the child and how do they transfer responsibility to the child? (Webster and Roe, 1998).

2.2.4 Importance of conflict and joint problem-solving for cognitive development

One aspect that has been studied by researchers is how social interaction between children in ordinary circumstances can explain cognitive development. This builds on both Piaget's and Vygostky's theories. For the Genevan-inspired research, social interaction creates conflict and disequilibrium between the different perspectives of social partners (Mugny and Doise, 1978; Doise and Palmanori, 1984). Socio-cognitive conflict as an interactive process means that negotiation and resolution takes place and these are both good indicators of cognitive development. However, in order to achieve this it is important to

establish and maintain communication. It also facilitates if both partners have a shared task perspective (Garton, 1992).

For Vygotsky, it is through social interaction and collaboration with more experienced partners that cognitive development takes place (Wood, 1988). Social interaction provides an opportunity for discussion which in turn facilitates cognitive development. The more partners communicate and negotiate in order to establish roles and a task strategy, the more collaborative they are and in turn, the more successful they will be in terms of performing a task and in cognitive gains (Garton, 1992).

Many researchers (Mugny and Doise, 1978; Light and Glachan, 1985; Perret-Clermont, 1980; Bearison et al., 1986; Azmitia, 1988) agree that working in pairs can contribute to cognitive development. However, what is important is to establish what are the factors that are salient for such cognitive development and how such development can be promoted.

When considering interaction between children it is important to bear in mind what may be specific in such social interaction. Peers have a very important role as they have the same power status. There are things children do with each other that they would not do in the presence of an adult. Children may feel more at ease to discuss and to examine the logic of arguments when working in pairs with same-status peers. Even knowing that adults may request more clarification than peers do, children present more self-generated clarification when they interact with other children than with adults (Kruger, 1988; in Rogoff, 1990).

The fact is that natural interactions between children have not been studied very widely because researchers do not have an easy access to such natural situations. In reality children spend a lot of time interacting with other children, peers at

school, in the neighbourhood, siblings, children of their parents' friends, etc. This is an important issue for social scientists as collecting data on natural interactions is extremely time consuming and may disrupt the privacy of such natural interactions. Dunn (1988) observed natural interactions and looked into how playing with an older sibling shows the younger sibling's gradual ability to co-operate in play by recognising and sharing mood and actions, recognising and co-operating with the sibling's objectives, compliance in the play context, reversing their roles and sharing and co-operating in a pretend framework.

Interaction between children of a similar age provides the opportunity to compare and explain ideas on an equal status and it also provides the opportunity to try and examine rules of everyday life. Besides, it is motivating for the children (Rogoff, 1990).

Shugar (1993) also argues that when children interact with each other they are more active in structuring the task and through diversification of role functioning children show their abilities to one another and to themselves.

When children are confronted with conflict which has been recognised as such by the presentation of a different point of view, children cannot ignore the contradiction and therefore there has to be cognitive restructuring. However, this restructuring cannot happen until the child is able to recognise the conflict. Interacting with another child means that the child will have to co-ordinate his or her actions with those of the partner, which brings a confrontation between points of view which will only be assimilated if there is cognitive restructuring (Perret-Clermont, 1980, in Bearison *et al.* 1986).

Light and Glachan (1985) observed children interacting during two different tasks: a game that involves a complex seriation task and 'Mastermind'. They found

that in order to observe progress it was not enough for children to be presented with the right answer nor just to be confronted with a conflicting viewpoint or solution. They agreed that working in pairs on problems can improve children's progress in problem-solving tasks but the children who were more likely to progress were those who discussed each other's perspectives.

Bearison, Magnazamen and Filardo (1986) compared children working individually and in pairs on spatial perspective tasks. Although they did not find significant improvement in children who worked in pairs, they identified aspects that distinguished between those children whose performance improved significantly and those who did not. There was a relationship between cognitive gain and verbal conflict. However, only verbal conflict with an explanation attached was found to be beneficial for cognitive development. They concluded that only certain kinds of conflict promote cognitive gains and these kinds of conflict were more likely to occur when children used different task strategies. They also found that a mutual balance between partners in the expression of conflict was beneficial. In this situation partners could monitor each other's reasoning and adopt complementary roles in solving the problem. When one partner dominated such benefits were not observed.

Azmitia (1988) observed children working in pairs during a task with Lego. The children who observed each other improved more in the task than those who did not. Novice children who improved their performance spent three times longer observing their more experienced partners. On the other hand, the more experienced partners spent five times longer monitoring and observing the actions of their novice partners, who improved their performance more than the experienced partners who were paired with novice children who did not improve their performance in the task. Azmitia concludes that novice children gained from interacting with more expert peers and that the increase in competence in

the task was mediated by the quality of verbal interaction. Children discussed their points of view by explaining and demonstrating and the more expert partners mediated novice partners' progress.

Garton and Renshaw (1988, in Garton, 1992) also observed that in conflict situations, older children had verbal rather than non-verbal disagreements. Cognitive progress was more likely when children working in pairs listened and responded to their peer and provided clarification whenever it was required.

Mugny, Paolis and Carugati (1984) referred to the importance of children to be able to perceive and recognise the difference in their responses to the task so that socio-cognitive conflict can take place. If a child attributes any disagreement to their own incompetence it becomes very difficult for socio-cognitive conflict to be recognised and with it for any cognitive benefit to occur (Mugny, Paolis, and Carugati, 1984). Also, in order to observe cognitive gains both partners need to be active. If one of them sits back and lets the other control the whole situation, again socio-cognitive conflict does not occur.

Forman and McPhail (1993) also referred to the importance of genuine collaboration with both partners taking turns listening, observing, explaining, etc, how children need to have the opportunity to be active in setting their own goals and in organising their own activity and how important it is to develop a shared means of communication.

In summary, data drawn from research on conflict resolution and associated cognitive restructuring form an important field of enquiry with potential implications for raising all children's cognitive achievement. However, the application of such research from normal development has not before been explored in the field of visual impairment.

These issues therefore have a high degree of relevance when considering children with visual impairments. Having a shared task perspective may be difficult if not impossible, when children with visual impairments interact with their peers in a problem-solving situation. Besides, having an equal status may also not be possible: this really depends on how children perceive themselves and their peers and how their peers perceive the child with visual impairment. The experiences of children with visual impairments are certainly very varied but they most certainly learn how to use others as a resource of information that they cannot gather; and for young children trying to understand how their environment is organised they may come to the conclusion that others always know best. There is no research evidence on cognitive gains when children with visual impairments interact with their normally-sighted peers and this is an aspect that I tried to explore and that could be explored in more detail in the future.

2.3 Language

The present research focuses on how children with visual impairments and their partners use language to interact during play activities. This also includes a focus on language input from which they receive information from their environment, how they are directed into activities, how they control others' behaviours and how their behaviour is controlled by others. Language development is an area which has great implications for social interaction especially for children with visual impairments who miss out so much from non-verbal communication. The increase of language competence is an important factor in promoting reciprocal communicative interactions (Recchia, 1997).

Similarly, it is by enriching the language environment of the child with visual impairments and his or her family that compensatory intervention is achieved.

2.3.1 Early language development

Initially, infants communicate with other people through non-verbal interaction. The pre-verbal phase of language acquisition includes crying, laughing, cooing and babbling. The first early exchanges that occur between the dyad of mother-infant are strongly based on visual information and they form the basis of communicative structures of the adult discourse system (Fraiberg, 1974; Bates, 1976; Urwin, 1978; Dunlea, 1989; Mills, 1993). Later on, vision has an important role in helping the child to understand the meaning of words due to the fact that the sighted child can observe others acting and talking and tries to understand what the others are saying in relation to what they are doing. Thus, the sighted child can build hypotheses concerning the meaning of the words and through experience (observing and listening) test those hypotheses in the contexts in which communicative exchanges arise and derive their purpose (Dunlea, 1989).

Bates *et al.* (1975) distinguished three phases related to the function of the vocalisations produced before acquiring speech. The first is the perlocutionary phase in which children react innately to some physiological states in an attempt to satisfy their needs or to maintain the social interaction. Another phase is the illocutionary one in which children are already aware of the possibility of controlling some events but not others and they use tools to achieve their objectives. Thus, children either use objects to act on other objects, people to act on objects or objects to act on people's attention. Children do this by showing off, i.e. repeating an activity that was considered funny or, by using a third element

- objects - that they point at, show or give to people and in that way direct others' attention (Bates, 1976).

For example, a child who points at a beaker that is out of reach while crying is expressing a need for a drink and using an adult as a way of getting it; a child who touches a forbidden object and looks at the adult may be trying to attract the adult's attention; the child who repeats a funny vocalisation because that made others laugh is maintaining the other's attention focused on his or her activity.

Finally, there is the locutionary phase in which children begin to use words as signals. Initially, a word-like signal is used for everything that the child wants to communicate, then the words begin to be used in a more limited situation and it is as if they belong only to that situation; finally, there is a generalisation and the child uses that word for all similar objects (Bates et al., 1975).

Some very early observations of babies with severe visual impairments show that they do vocalise, coo and cry at about the same time as infants with 'normal' vision. At the babbling stage, when the child begins to produce the significant sound contrasts which are used around them, blind children have been reported to vocalise less than sighted children (Fraiberg, 1977). However, this may be because the infant is listening more intently.

Some researchers have focused on comparisons between language development of children with visual impairment with that of children with 'normal' sight (Kekelis and Andersen, 1984; Matsuda, 1984; Bigelow, 1987; Dunlea, 1989, Erin, 1990; Mills, 1993). Most of this research was developed with the aim of describing the role of vision in language development by comparing groups of children with and without a severe visual impairment. However, this research would require for analysis, children similar in all other ways apart from their

vision, which poses enormous problems for the researcher. They either analyse a very small group of children, usually in case studies, or there are so many variables that it is difficult to interpret any results (Mills, 1993).

Dunlea (1989) observed some important differences between blind and sighted children's lexical development. Some of these differences are due to the fact that (1) the words initially acquired by a blind child continue to be used even when they no longer serve their needs; (2) their words seem to be strongly linked to their original context for a long period of time; (3) they are also linked to their own activities; and (4) the processes of extension in blind children were limited (Dunlea, 1989).

A high proportion of most sighted children's first 50 or so words refer to the 'here and now' of their daily lives: items of food, clothing, body parts, animals, vehicles, toys, people. Although, many children with visual impairments present some delay in the acquisition of the first words there is no evidence of major delays in the onset of language (Urwin, 1983). Researchers who have studied the first fifty words of blind children highlight differences in content rather than rate of word acquisition (Bigelow, 1987).

Children with visual impairments tend to use more words referring to their own actions, have fewer general names for classes of objects (cat, fish), but more specific names (for individual toys, pets, people). Their word sets tend to have fewer modifiers (qualities of objects such as cold, hard) and function words ('what's this?'), but more words for use in social interaction ('thank you'). Contrasts between groups in early word sets are assumed to reflect differences in experience (Bigelow, 1987).

The first words acquired by the child with a visual impairment may not be used spontaneously to initiate interaction with others but they can be used in the child's own play. However, if carefully examined there are differences in the use of words which seem to reflect the importance of visual information in building hypotheses about the meaning of words (Dunlea, 1989). The use of words especially to request objects emerges slowly in children with visual impairments (Urwin, 1983).

Words may also be used in more egocentric ways by blind children. For example, action words were used by the experimental subjects in Dunlea's (1989) study to refer exclusively to themselves (eg., 'dance' while dancing, 'walk' while walking, 'rock' whilst being rocked). This can be due to differences in language input to which these children are exposed.

Blind children use different object features to determine how words are applied, reflecting the salience of non-visual information (Dunlea, 1989). The more limited extensions of children with visual impairment reflect more limited experience of those features of the world through which objects tend to be classified. Blind children with more limited stores of information about objects and events in their environment find it more difficult to identify the common elements shared by different things, with the result that words associated with one context are not so easily applied to another (Dunlea, 1989).

Blind children frequently refer to past events which may be a strategy to avoid misunderstandings about the 'here and now' context (Andersen et. al., 1993). The use of deictic terms (this, here, that, there) can pose some difficulties to children with severe visual impairments as these terms' value shift depending on who is talking. It has been reported that some blind children used deictic terms

as names of objects or locations (Mulford, 1983). Similarly, appropriate use of pronouns such as 'I' and 'you' requires an awareness of role relationships.

Andersen, Dunlea and Kekelis (1993) suggest that blind children may develop concepts of time before they develop concepts of space as usually occurs with sighted children, and that locational terms (in, on) seem to be used by blind children as verbs first (put on your coat) and only later as prepositions in locative expressions (on the table). Children with severe visual impairments may also present difficulties with gender terms and where confusions do arise, these seem directly related to aspects of visual experience, such as the problem of determining the sex of the referent in the absence of visual clues.

Dunlea's (1989) case studies show remarkably similar patterns of development in both sighted children and individuals with severe visual impairments. Differences tend to reflect the availability of visual information: blind children use many more attention-seeking strategies, requests for objects, actions and activities; they want to join ongoing games and play, or to involve others in what they are doing; they signal their displeasure at the actions of others, comment on events and ask questions, or simply use language to sustain social contact.

Research evidence suggests that some children with visual impairments may keep on asking questions over and over again (Erin, 1986; Segal, 1993). This may serve a number of functions such as soliciting information ('What happens at lunchtime?'), requesting action or permission ('Can I bend this?'), seeking confirmation ('That's a hailstone, isn't it?'), or simply sustaining social contact with a partner ('Do you know what?') (Erin, 1986). Children may use this strategy because they learn that asking questions is a way to get an adult to respond, making sure that the adult is still there; or it may also be due to the fact that adults pose many questions to these children (Segal, 1993). Later in

development, asking appropriate questions is an important skill that is essential for the child to gather information from the environment. Asking appropriate questions during play activities with peers may be an important strategy to gather information from these activities and therefore allow the child to participate actively.

Landau and Gleitman (1985) analysed what constitutes experience in language learning by comparing sighted and blind children's use of visual verbs. When a child with limited vision is asked 'to look', more than likely this is interpreted in terms of 'exploring' (Landau and Gleitman, 1985). The meaning of sighted terms will be deduced in accordance with the child's growing understanding of the world, through the sensory modalities which are available, and the verbal interpretations from adults which accompany them. Landau (1997) argues that visual experience is not essential to learn language as part of the meaning of nouns and verbs is linked to syntax. Therefore, children who do not have access to visual information are capable of acquiring meanings. However, there are pragmatic problems. A child who does not see may comment more on her or his own actions, not because of lack of understanding of others' actions but because of loss of information (Landau, 1997).

2.3.2 Language deviance in children with visual impairments

Apart from these differences and similarities in language acquisition there are also some aspects of the language of children with visual impairment that have been found to be deviant. These aspects include stereotypic speech and echolalia and if they persist, they can have undesirable implications on social interaction.

Stereotypic speech is the picking up of phrases used by caregivers in certain situations, which are then reproduced in similar contexts. The child may reproduce the exact rhythms, vocabulary and tones of voice heard previously, although the utterances are used by the child in a non-instrumental, non-interactive way. Dunlea (1989) suggests that the use of stereotypic speech is unique to children with severe visual impairments and serves a special purpose. The sequences of utterances reproduced help 'fix' a familiar or routine event. Chunks of language are an integral part of the available sensory information which represent an event in the child's imagination. They are more likely to occur when speech is difficult to map onto external referents.

Echolalia is described as the inappropriate parroting of words or phrases and it can be observed in many young children, and may serve the purpose of rehearsal or wordplay. The persistence of echolalia into later childhood in some blind children has invited comparisons with autism (Mills, 1993). Some autistic children repeat whole phrases heard previously, in a new but wholly inappropriate context, without understanding.

The occurrence of echolalia within a context of social interaction whereby children may repeat samples of language with little relevance or meaning evidences their lack of understanding of how to communicate with others.

The use of language helps the child to compensate for the lack of visual information and gives an opportunity for children to achieve intersubjectivity with others. However, for this to happen children need to become competent users of language to express themselves, make requests and interpret language directed to them. In this section, focus has been given to previous research which shows how important the child's social experience is in sustaining or modifying language. In the present study, the aim is to identify salient factors in social

contexts that promote meaningful verbal exchanges with different social partners.

2.3.3 Adults' role in language acquisition

A context where infant and adult act together and share their attention on the same event becomes essential for the child to acquire language. In playful interaction with children, adults play an important role in directing the child's attention both to the communication itself, and to the structure of the acts in which communication is taking place (Bruner, 1975).

Children with visual impairments may face some difficulties in establishing communication with others mainly in the early stages when visual information is essential. Shared attention and joint reference can be much harder to establish with infants who have a visual impairment. The adult's commentary, intonation and tone of voice are normally tied to familiar events, so that when attention is drawn to a particular object, the relationship between words and their referents is emphasized. Therefore, in the early stages of parent-infant interaction, visual information provides a stimulation for determining the meaning of language heard and it also provides parents with clues about the child's verbalisations. Parents are reinforced by visual cues to continue interacting with the child. These cues may be more difficult to identify when the child has a severe visual impairment (Finello, Hanson and Kekelis, 1992).

However, lack of vision does not necessarily result in a developmental delay and we can observe similar development paths in pre-verbal communication, emergence of representation and other aspects of language development in children with and without visual impairments (Urwin, 1983).

Adults play an important role in children's language acquisition due to the fact that they can regulate the way in which children use language. Besides being able to give a model to the child, adults can also request more information about what the child is trying to say. Understanding is dependent on many factors and certainly the situational context is an essential factor for young children.

To play such a role in language acquisition, adults need to be sensitive to the child's interests and communicative attempts. Probably both adult and child play important reciprocal roles in the way that they shape the interaction. On the one hand, the adults shape their language input to levels just beyond children's current competence. On the other hand, the changes in adult's speech reflect the child's understanding and are determined by what children evoke. It is possible that children who are less active and effective communicators may evoke more directive and less facilitative speech from adults (Kekelis and Andersen, 1984).

Language is particularly important for the child with a visual impairment because it is through language that the child can establish social contact with the others and through them that they receive additional information about her or his environment. It seems that there is a bias towards the development of intentional communication in children who do not interact actively with their environment. Therefore, it is extremely important to develop interaction in the adult-child dyad due to the fact that it functions as a 'bridge' between the child with a visual impairment and the environment (Rogow, 1984).

2.3.3.1 Adult language input to children with visual impairments

One aspect that can be observed in children with visual impairment is the link between children's words and their own bodies or activities. This may be related to the fact that parents while interacting with children with visual impairments show a tendency to introduce topics of dialogue which are usually child-centred (Andersen, Dunlea and Kekelis, 1993). Besides, parents of children with visual impairments request more actions, are more repetitive in these requests and provide less information about functions and features of objects (Kekelis and Andersen, 1984). Thus, children with visual impairments can in fact, be exposed to a different kind of input from the people who deal with them, which can be a relevant factor when it comes to children being more centred in their own bodies and activities (Erin, 1990).

A study developed by Preisler (1991) on the interaction established between mothers and their blind infants over a period of time showed that initially, infants took part in rhythmic body-touching songs and games, they smiled and presented cooing and babbling. In the presence of the mother, children increased their body movements, smiled and vocalised. From seven months of age, toys started to be included in social interaction and the mothers interpreted the manipulation of toys as a signal of interest and commented on the infant's activity, establishing a shared topic of interaction. Later on, from around nine months of age infants started to share themselves with their mothers but they could not share a topic concerning objects in the external world.

At around one year of age, Preisler observed that blind children were not pointing at objects or people and that when they heard an unfamiliar sound their bodies and facial expressions would freeze. This behaviour is often considered by

adults as a lack of interest instead of being interpreted as interest, concentration and cognitive activity. Misunderstandings occurred in contexts where infants directed their attention towards sounds by means of a gentle leaning movement towards the sound, these slight movements being difficult for adults to interpret.

From two years of age, at a stage when sighted children are starting to talk about their own and others' feelings, the way people behave etc, children with severe visual impairments are still exploring their environment (Preisler, 1991). Often, parents of children with severe visual impairments are more directive towards their child and very rarely talk about themselves and their own feelings. In a way, the main topics of conversation are centred on what the child is doing, feeling, etc.

In a study developed by Kekelis and Andersen (1984) pre-school children were observed in 'chunks of everyday life' with their parents. Aspects such as the distribution of sentence types in the children's input, ratio of labels to attributions, presentation of topics were analysed. The findings of this study show that parents were more directive towards the blind child, many of the requests made were related to the child's actions or possessions, parents provided labels to objects or actions instead of descriptions, and topics were mainly introduced by the parents and were related to the child's own activity (Andersen, Dunlea and Kekelis, 1993).

Imperatives were the most frequent type of sentence which children with severe visual impairments received. Instead of receiving the kind of information which is inaccessible without vision, such as descriptions of the immediate environment, children with visual impairments were given significantly more labels for things. They received fewer statements describing the persons, objects or events in their 'here and now'.

Parents also spent a lot of their conversational time requesting labels of objects or the identification of events. They encouraged children to respond by answering questions about their actions and possessions. Adults determined the majority of the topics of conversation, whilst few of these topics linked current interests to distant persons or events. Andersen, Dunlea and Kekelis (1993) explain these findings as a strategy used by adults when they find it difficult to understand what is the focus of interest and to what extent the child understands. Therefore, adults use directives to stimulate movement and exploration ('Stand up like a big girl...put your hand up'). However, providing children with many directives tends to inhibit rather than stimulate the child's involvement.

Without visual cues, such as eye gaze, it is often much harder for parents to read their child's focus of interest and to supply commentary which is relevant. There are problems in both establishing and maintaining topics of conversation, in producing coherent and cohesive dialogue (Mills, 1993). Hence, adults frequently change topic, request objects or actions, and ask more questions (Erin, 1986; Andersen, Dunlea and Kekelis, 1993).

Children benefit from interacting with adults who are sensitive to their needs and perspectives. This is a process described earlier as contingency - referring to adults pacing and timing the help they offer to children by taking cues from the child's moment-to-moment perception and understanding. In such situations children are allowed to take the initiative, whilst the adult's role is to structure the task by prompting, reminding, making connections, suggesting, thinking things through with the child, providing information and feedback. If a child with a visual impairment does not often take the initiative, it is extremely important to take advantage of the rare occasions when the child actually does take the initiative. Contingent reactions to the initiatives of children are part of co-

operative partnerships where the adult facilitates, rather than manages or controls. In many of the interactions reported by researchers involving children with visual impairments, adults show difficulties to make their responses contingent on what the child does, or is currently interested in.

Therefore, it is essential that adults who deal with children with visual impairments use strategies which encourage children to take part further in the communicative process. Some of these strategies include: expanding child's language by describing objects or events, giving time to explore, giving the opportunity to have a wide variety of 'hands-on' experiences, correcting the child in an indirect manner, using open-ended questions to maintain conversation and by expressing personal feelings and putting the child's own feelings into words (Finello, Hanson and Kekelis, 1992).

McConachie (1990) suggests that in order to analyse language development in children with visual impairment it is important to analyse the context in which language takes place, how parents respond to different kinds of cues shown by the child, what kinds of descriptions and instructions these children are exposed to and how the child gains control over their world.

To summarise this area of the literature and its relevance to the present study, it seems that whilst language holds the key to effective compensatory intervention for children with visual impairments, in fact it is by no means straightforward for adults to provide the kind of rich linguistic inputs to children which they require. The research finding that adult speech directed to children may be inhibitory rather than facilitative leads to another major hypothesis of the current study: that some obstacles to the development of children with visual impairments are environmental in origin, depending on the expertise of

caretakers and peers in using linguistic exchanges to promote the engagement of children with visual impairments.

In the present research, I will be focusing on what kind of strategies are used by children with visual impairment to gain attention from others, control others' behaviours, make requests and also what kind of input they receive from others as children, their peers and adults interact in a school setting during play activities. The objective being to identify more or less effective linguistic moves which promote engagement.

2.4 Play

2.4.1 Definition of Play

Play involves a variety of different observable behaviours. Although it is easily identified, it is difficult to define play theoretically, in particular, the precise functions it serves. Thus, there is not a universally accepted definition of play as such, but there is a set of criteria which is used by researchers and educators to define when play occurs. Often, a certain play activity does not represent all the criteria, but the more criteria represented in a play activity the greater agreement exists that a given activity is play (Smith and Cowie, 1988).

According to Rubin, Fein and Vanderberg (1983, page 698) these criteria include the fact that play is intrinsically motivated: "it is characterised by attention to means rather than ends"; it is different from exploration since the child, instead of trying to understand what a certain object is or what it does,

asks her/himself 'what can I do with this object?'; it is non literate; it is free from external rules; and the individual is actively involved in the activity.

For Piaget (1951), play represents the dominance of assimilation over accommodation. While playing, children are assimilating objects and events into their ways of thinking. It is through the co-ordination between actions and their sensory results that knowledge develops. Play, in Piaget's view, is a way by which children consolidate the skills that they have acquired. This is achieved by the repetition of these skills. Besides, play is a way by which the child achieves a sense of mastery and self confidence (Smith and Cowie, 1988).

Piaget considered three main categories of play which have a correspondence with the stages of cognitive development, namely sensory-motor, pre-operational and concrete operational (Rubin, Fein and Vanderberg, 1983). According to Piaget (1976, page 564), "symbolic play is to practice play as representational intelligence is to sensory-motor intelligence".

The form of play that corresponds to the sensory-motor period is usually denominated as practice or functional play and it basically consists of repetition of movements already mastered just for the joy of exercise with no attempt at adaptation. The child enjoys the fact of being able to cause an event and observe its consequences (Garvey, 1990). Symbolic or representational play is characterised by representative thought which emerges when the child begins to differentiate signifier from the signified. At this stage the child is able to evoke images of events that are "outside the immediate perceptual and active field" (Piaget, 1951). Finally, Piaget considers games with rules as the latest category of play to develop and corresponds to the concrete operational stage. The category of games with rules is characterised by being social, hence it is observed when at least two children play and compete together and by a regulation of children's

behaviours according to rules that are agreed between them, even if this agreement is temporary (Rubin, Fein and Vanderberg, 1983).

For Bruner (1972, in Smith and Cowie, 1988) play is an essential way of practising skills and of creating new combinations of behaviours within the safe situation of play. Through play children can discover and try out new strategies that can afterwards be transferred to other situations. In this way, play has an important role in the flexibility of the individual, in their cognitive development and creative thinking (Rubin, Fein and Vanderberg, 1983).

According to Vygotsky, play originates from a combination of affective-social and cognitive factors. Play is seen as the creation of an imaginary situation, or as an illusory realisation of desires (Vygotsky, 1976). For Vygotsky, play has a role in the internalisation processes due to the fact that it allows the child to learn to act in a cognitive way rather than a physical, external and observable way. It is through play that children learn how to control their behaviours by the meaning of the situation rather than by the immediate perception of physical objects (Vygotsky, 1976). Through play activity the children start, unconsciously, to separate the objects from their meanings. In addition, play promotes development through creating the zone of proximal development.

Nowadays, it is widely accepted that a child's play repertoire is an important means to foster cognitive, language and social development; to foster creativity and problem solving skills; to develop symbolic formation and participation in the peer culture (Corsaro, 1985, Vygostky, 1976, Bruner, 1972, Sylva, 1977, Sutton-Smith, 1979, Piaget, 1962 and Rubin, 1980 in Furth and Kane, 1992; Nicolich, 1977). Play provides an opportunity to meet children's basic learning needs (Moyles, 1989). Through play, children can practise, choose, gain competence and confidence by exploring the properties of objects and space;

they can also acquire new knowledge; they have opportunities to create, observe, experiment, etc. Children can also communicate, question and acquire the strategies which sustain appropriate social relationships and promote understanding of the needs and perspectives of others. It is through play that children can also learn to value themselves and understand personal limitations. Play offers an opportunity of being active in a safe and secure environment (Moyles, 1989).

2.4.2 Development of play

Infant play is characterised by attention to movement, exploration and simple actions. A lot of this play is solitary, i.e. infants repeat and practise behaviours they have discovered. In doing so, infants explore and learn about their environment with enjoyment. Infants also enjoy playing with their caregivers or other adults and children. They take great pleasure in being rocked, jiggled, tickled or seeing a face appear and disappear (Garvey, 1990). This play is characterised by routines that the infant gets to know and becomes able to anticipate what is going to happen next. Often others introduce objects in play and joint attention develops. During the first eighteen months of age, infants begin gradually to play with more than one object and to combine them. Infants may use objects in an indiscriminate manner by mouthing, banging or manipulation and they also learn to use objects by their functional use for example, putting a spoon in a mug (Rubin, Fein and Vanderberg, 1983).

At about twelve months of age there is a change in play and children begin to present the first pretend behaviours. Initially, these behaviours are a set of real life gestures such as pretending that they are eating or sleeping which are

accompanied by details related to the actions (Rubin, Fein and Vanderberg, 1983).

The development of pretence plays a very important role in children's development as it requires many of the same skills which contribute towards establishing a theory of mind, for example, understanding others' nonliteral actions and remarks which implies understanding others' intentions and feelings (Youngblade and Dunn, 1995). Pretend play is seen as an important assessment tool because of its contribution to children's cognitive and social development (Fein, 1981; Connolly and Doyle, 1984; Fiese, 1990; Youngblade and Dunn, 1995). Intervention to promote pretend play results in a reduction of egocentricity, improvement in perspective taking and cooperative social problem-solving (Fein, 1981). For children to be able to collaborate in social pretence they need to decode the other's non literal actions and comments. Children show individual differences in social pretence which are due to their individual experiences in their everyday environments, but there is a relationship between children who engage in early social pretence and their understanding of other people's beliefs and feelings (Youngblade and Dunn, 1995).

One of the major developments of children in the first two years of life is the gradual emergence of the ability to represent experience symbolically (McCune, Dipane, Fireoved and Fleck, 1994). This development is evidenced in children's play and language, with symbolic play providing a useful way of identifying structural developments in language (McCune-Nicolich, 1981; McCune, DiPane, Fireoved and Fleck, 1994).

For Piaget, pretend play develops in terms of decontextualization, substitution of objects, decentration and sequential combinations (Fein, 1981, 1984).

Decontextualization refers to pretend play when it occurs in a situational context that is different from the usual context where these actions are performed, i.e. the child pretends to eat or to sleep outside mealtimes or bedtime. Children's pretend play also develops from using a realistic object, for example a spoon to feed, to a stage where the child can use some other object, initially an object that presents some similarities with the original one (shape or function), and even to a stage where the child can pretend the same situation without using objects at all (Crum, Thornburg, Benninga and Bridge, 1983; Smith and Cowie, 1988).

Fein (1975, in Smith and Cowie, 1988) suggested that in early pretend play realistic objects are necessary but, progressively, children become able to use other objects. However, the simultaneous substitution of two objects was more difficult for children and it was also more difficult to substitute the original object by an object with a different specific function than by an object that has no specific function. For example, it is easier for the child to substitute a car by a block than to substitute a car by a cup, due to the fact that a cup has a specific function (Rubin, Fein and Vanderberg, 1983).

According to Piaget, this ability to substitute objects is seen in terms of the development of representational thought. Vygotsky sees the substitution of objects as the separation between meaning and the immediate external context (Fein, 1981). On the other hand, decentration refers to the fact that pretend play develops from acts that are centred in the child to acts that are centred in others. Children begin to feed themselves, then they begin to feed a doll or an adult and, finally, children are able to make the doll act as an active agent, i.e. children pretend that the doll has wishes and needs, etc (Fein, 1981, 1984; McCune-Nicolich and Fenson, 1984). Children begin to be able to decentre from themselves and to act as if they were someone else (Rubin, Fein and Vanderberg 1983).

Pretend play also develops in terms of sequential combination. Initially, only isolated acts of pretence are observed, for example, children pretend to feed a doll or to use the telephone. Later, children begin to give a sequence to the pretend acts, first by a repetition of the acts with some variation, for example, children may feed two dolls one after the other. Finally, children are able to combine a sequence of pretend acts in such a way as to create a story, for example, children may feed a doll, then take it to school, then do the shopping, etc (Smith and Cowie, 1988).

In the most developed stage of pretend play children are able to present sequential combinations, they are able to act as someone else and to give an active role to inanimate objects, they are able to substitute objects and progressively children are not dependent on the objects that are present in their context. Children begin to be guided by their ideas and they can play without objects or use these independently of their specific function. Play develops then from the exploration of objects and realistic object use to extended pretend sequences and later on to planned pretend (McCune, Dipane, Fireoved and Fleck, 1994).

Pretend play has a function of giving the opportunity for children to negotiate shared meaning systems within which the pretend action can be understood by the players. This shared fantasy play provides children with an opportunity to develop their understanding of the social world. It is the combination of conditions in pretend play, such as the freedom from real life and the need to build a shared fantasy event, that leads children to complex social interactions. Children need to negotiate, clarify their intentions and take into consideration others' points of view, they need to argue and justify themselves in order to be able to get involved in such shared fantasy play (Stambak, Ballion, Breaute and Rayna, 1985; Haight, Masiello, Dickson, Huckeby, and Black, 1994). Here

again, children who are able to assess and promote shared knowledge for their peers, to facilitate the transmission of shared information among others and to give a framework for the ideas of peers seem to have a higher social status and gain dominance in the group.

Constructive play is another form of play which was seen by Piaget as a stage between pretend play and adaptive intelligence. Representation is involved in constructive play but the activity in itself moves away from play towards a spontaneous intelligent activity (Rubin, Fein and Vanderberg, 1983). This form of play is seen as being related to the development of problem-solving skills.

Games with rules is a form of play which develops mainly after seven years of age. Games with rules implies the interaction between at least two children and requires from them the ability to achieve mutual agreement and behave according to the rules agreed beforehand (Rubin, Fein and Vanderberg, 1983; Smith and Cowie, 1988). This type of play emerges when children begin to understand social concepts of co-operation and competition (Garvey, 1990). The other feature of this form of play is that the goal is known a priori (Smith, Takhvar, Gore and Vollstedt, 1986).

2.4.3 Play and children with visual impairments

It is through play that children gain a sense of control over their environment, they learn to do things on their own and become competent in dealing with objects around them. When children do not develop this sense of control over their environment they tend to concentrate on themselves. This is a risk for children with severe visual impairments and early opportunities for exploration and play have an essential role in these children's development (Recchia, 1997b).

Children with visual impairments have more difficulty in spontaneously interacting with and exploring their environment. Due to the limited visual information received from the environment these children present a low level of motivation to explore. For children with visual impairments, interacting with and exploring their environment may not be as pleasurable as for other children and they may have had many experiences of injury which they try to avoid (Schneekloth, 1989). Familiarity with the physical context in which play takes place, including its boundaries, features and spaces, is important in enabling children to feel secure and actively explore their environment. Besides, children with visual impairments have limited possibilities to imitate others and their play may present behaviours that do not correspond to others' expectations. Adults have a very important role in providing the necessary stimulation for children with visual impairments to play and have opportunities to actively explore their environment and to become aware of others' actions and intentions.

However, evidence from previous research shows that adults have difficulties in stimulating play effectively. This is mainly due to their difficulty in identifying what interests the child, which often results in the adoption of more directive communication styles (Kekelis and Andersen, 1984; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997).

Some previous studies have focused on differences between the play of children with and without visual impairments. Tait (1972a) observed blind children during play sessions with a special set of toys. She reported that blind children present a large amount of interaction initiations with the observer and ask a large number of questions. Questions were not necessarily used in order to obtain information about their environment. Often, blind children did not wait for the observer's answer. Tait (op cit.) suggested that these children were using

questions as a way of keeping lines of communication open and they probably did not always find answers informative as they do not have access to the context. She argued that children who have a visual impairment engage in manipulative play more often than sighted children and presented difficulties in understanding spatial relationships. Recchia (1987) reported that many blind babies were not interested in exploring different toys and that generally they do not reach out and explore as sighted babies do.

In a study developed by Parsons (1986b) three age groups (2-, 3- and 4-year-olds) of children with and without visual impairments were observed in individual play sessions. These play sessions occurred in a special room with a set of toys and in the presence of one adult. The findings from this study show that children with visual impairments spent less time in active play behaviour, less time in functional use of toys and more time waving, mouthing and shaking objects. Although children with visual impairments spent a high percentage of their active play in stereotypical play, this tended to decrease with age. Stereotypical behaviours may indicate an insufficient amount of external stimulation and they are a factor which negatively influences the social integration of children with visual impairments. On the other hand, sighted children spent more time in pretend play with objects.

Parsons concluded that the patterns of play observed in children with visual impairments are qualitatively different from those of sighted children. According to Parsons (1986a) children with visual impairments have a tendency to be more involved with their own bodies than with people and objects. She also observed as Tait did, a large amount of interaction initiations with the observer. She argued that it seems that language is used as a way of being in contact with the environment (Parsons, 1986b).

However, these previous studies concentrated on children's play in special settings and on their own with a set of toys. They discouraged any interaction between the adult present in the room and the child being observed. This is not a natural situation compared with those that happen in these children's everyday lives. Research has shown that children's play is of a more complex nature when children naturally interact with caregivers or peers (Fiese, 1990; Youngblade and Dunn, 1995). The present research aims to address these issues by observing children in their natural and complex everyday environments.

In an examination of exploratory behaviours of sighted and blind children of 2 to 6 years of age, Olson (1983) reported that overall the behaviours presented by the two groups of children were similar, with the exception of the fact that blind children tended to use their hands and eyes to explore objects, while sighted children used their eyes. Children with more school experience presented more exploratory behaviours than those with less school experience.

Mogford (1977) argued that children with visual impairments are not able to imitate others' actions and they have difficulty in achieving an appropriate understanding of reality, therefore these children can present delays in symbolic play. Much of the symbolic play observed in young visually impaired children is related to assuming different roles in dialogues (Mogford, 1977). Fraidberg and Adelson (1973, in Mogford, 1977) also argued that visually impaired children present delays in 'domestic doll play'.

There is a strong link between language and symbolic play and Rettig (1994) refers to the fact that children who are most likely to engage in symbolic play are also the children who have developed personal pronouns such as 'I'.

Rogers and Puchalski (1984) analysed the schemes and/or single symbolic acts of children with visual impairments in three different scenarios which varied in terms of contextual condition. These scenarios were analysed in relation to scheme frequency, scheme diversity and number of sequences. Children with visual impairments showed lower scores in all the different conditions except in terms of scheme frequency in the realistic condition (Rogers and Puchalski, 1984). Tait (1972a) observed that visually impaired children from her study ascribed fewer roles to the objects they played with than children without visual impairments.

Various authors agree that these children's play with objects often has to be deliberatly and directly stimulated. Social interaction and language are essential to create interest of visually impaired children in objects and, on the other hand, play is a way of motivating the development of communicative behaviours and social contacts (Parsons, 1986a).

Rettig (1994) suggests the use of five different strategies to promote play behaviours of young children with visual impairments. These strategies include 1) specific instructions in play skills based on assessments of the child, 2) manipulating toys and playthings focusing on real-world objects, 3) adapting the setting to increase spatial awareness and exploration, 4) use of peers without disabilities and 5) the more active role of adults.

In the present study, a systematic attempt is made to describe play presented by children with visual impairments in real contexts, accepting its complexity and unpredictability.

2.4.4 Play environments and children with visual impairments

Schneekloth (1989) carried out a study concerning environmental interactions and motor activity of children with and without visual impairments in their natural play environments. These authors observed that developmental delays in children with visual impairments were due to their motor passivity, stereotypical behaviours and due to the kind of interactions they establish with the environment (Schneekloth, 1989). Although children with visual impairments were able to perform the same motor behaviours, they engaged less frequently in these behaviours. There were no differences in the amount and diversity of manipulative behaviours between the two groups.

Schneekloth (1989) also observed differences in the amount of time that children spent in social/play contact. More than 50% of the time, children with visual impairments were alone while sighted children spent only 14% alone (Schneekloth, 1989). Besides, while sighted children interacted more with peers, children with visual impairments interacted more with adults (Schneekloth, 1989).

In her study Schneekloth (1989) also focused on design principles for play environments which are an important aspect in promoting exploration and spatial understanding. This study involved 36 children, including children with a wide range of visual impairments, aged 7 to 13 years. The study considered those factors in play areas which were instrumental in promoting environmental interactions, as opposed to self-manipulative play. These include exploring the wider boundaries; use of the environment as props for fantasy play; gross movement, orientation and social interaction. All of the children in the study preferred equipment, rather than open spaces, and used objects in the

environment as activity organizers. Boundaries were frequently integrated into play by all the children in the study, but for children with visual impairments, physical edges and boundaries needed to be created within the play space, and not simply used to mark the periphery.

Regardless of age, sex or vision, complex equipment promoted the most complex motor behaviour and exploratory play in all children. Complexity refers to the number and kinds of elements: the number of pieces which can be linked together; options for access and the range of occupiable spaces; the presence of well-defined interior boundaries, districts and continuous links; together with cues to inform children where they are, such as sounds, textures, materials, colours, planes.

Schneekloth (1989) suggests that few of the play environments in our schools or communities are suited to the needs of children, much less to the needs of children with visual impairments. The use of real world objects is important as it allows children to build play around daily environmental hardware, such as doors with latches, knobs and locks; windows which open and close; turnstiles and revolving doors; kitchen equipment and machinery etc.

Children with visual impairments will always need very careful introduction, even to the best-designed play area. They need to be shown how to understand the structure of the environment and the cues to locate themselves within it. They also need to know that the area is safe, so that they interact freely with equipment. Most importantly, they need to feel the environment is exciting and holds many possibilities. Here, too, the adult has an important facilitative role to play. But in order to be able to have this role adults need to understand the development and use of communication strategies by these children.

Most of the previous research that was carried out concerning the play presented by children with visual impairments was developed with children either playing alone, or in the presence of an adult who is not supposed to promote interaction with the child. It also has been conducted in special rooms which are not representative of natural settings frequented by these children.

This previous research has given us some insight into what these children do in such situations but these findings can only partly be applied to other contexts. The fact that previous research has been developed in this way has made it very difficult to transfer research findings into educational practice. In real life, adults do interact with children and there are other children around who may play with the same toys, who may take toys away, and with whom a child has to deal.

However, this research trend is beginning to change as can be seen in the work of Ferguson and Buultjens (1995), Preisler (1993) and Kekelis and Sacks (1992). They developed descriptive studies and gathered information concerning play and/or social interaction of children with visual impairments in their natural settings. Ferguson and Buultjens observed the children in Scotland in whatever setting they frequented, while Preisler, Kekelis and Sacks developed studies in mainstream settings in Sweden and in the United States. Studies like these are rare and it is of paramount importance to investigate further in this area.

Ferguson and Buultjens (1995) were particularly interested in observing how blind children play and how different play categories relate to different stages of development. They observed children from sixteen months to six years of age wherever it was possible (home, nursery, school). This study showed that children with visual impairments presented all the different play categories and

that many of these were related to stages of development. The frequency and duration of fantasy play was found to be very highly correlated with verbal comprehension and expressive language; this play was presented from eighteen months of age, it was more evident if prompted by an older child or adult and it was more often characterised by the use of language and sound than by the use of objects. Rather than delays, Ferguson and Buultjens saw differences as children with visual impairments continued using more language for fantasy play than objects. Another finding from Ferguson and Buultjens study was the fact that peers or older siblings were more effective in promoting play in the younger children they observed than were adults.

Preisler (1993) also observed blind children, but children who were integrated in mainstream nurseries. She identified participation in social interaction with sighted children as a major difficulty for blind children and concluded that the possibility of these children participating in play with sighted children depends very much on whether it is a structured, semi-structured or free play activity. Free play activity was particularly difficult for blind children because it was difficult for them to find toys to play with. Besides, the nursery was not really organised to take into consideration the needs of children who are blind. The teachers had very limited knowledge of these children's needs, the toys were mostly visually attractive and not necessarily very meaningful for the blind child.

On the rare occasions when blind children participated in social play with sighted children, this play was characterised by the sighted children following the blind child's play and not the opposite. The blind children showed difficulty in imitating and in communicating with sighted children during play and preferred to move away to a quiet area where they could be on their own or interact with adults. Actually, blind children spent most of their time with adults: this contact

seemed to be more interesting and stimulating for them than interacting with peers (Preisler, 1993). We could say that this is due to the fact that adults find it easier to understand a child's needs and to adapt to them. However, it is also thought that interaction with sighted peers can be directly stimulated, and can be a positive experience for both children who are blind and sighted.

When blind children started nursery, the sighted children showed interest in them, this was true especially for girls. However, the blind children did not show interest, often refused contact with their peers and the way they explored their environment and played with toys did not promote social interaction with sighted children.

Kekelis and Sacks (1992) observed blind children at the beginning of their life at school. They found that the majority of these children had fewer opportunities to play with their sighted peers and to acquire language and social skills. These were important factors for these children's inclusion in the class.

They found that teachers who considered the development of social skills equally as important as academic achievement provided a better basis for children's positive social interaction with peers. They also identified factors that were very important to foster the inclusion of children with visual impairments. These factors were the characteristics of the children involved such as their language and social skills, their ability to initiate conversation and to talk about the interests of other children rather than just themselves. The characteristics of the sighted peers were also important, interacting with socially skilled peers was more successful than interacting with peers who were not socially skilled.

Another factor that promoted the inclusion of children with visual impairments was the type of activity in which children were engaged. Activities carefully

selected by the teachers, with a certain number of children involved, with a constant presence of the same children, with good organisation of materials, and with clear play rules seemed to foster more social interaction between the children.

The amount of support from the teacher, the classroom environment and the adaptation of materials were also considered important factors as they provide an opportunity for the child to have more equal access and a more stimulating environment. Furthermore, one aspect that the Kekelis and Sacks study identified as essential is to closely monitor conversations and interactions of the children and to help them with their special needs in this area.

Exploring their environment, playing and interacting with others are certainly important aspects for the development of any child and they have an impact on language and cognitive development. Tait (1972c) refers to the responsibility of educators of children with visual impairments in not neglecting the need to stimulate children to participate actively in spontaneous play.

In summary, the development and promotion of play is an important aspect of the existing research literature in terms of its implications for understanding and promoting processes of social interaction. Play provides a strategic context for scaffolding, and it is also inextricably linked to the child's experience of language and problem-solving. There are however, only a few extant studies of play involving children with visual impairments which have been carried out in natural settings at home or in school. The research evidence reported in the literature to date has informed another main hypothesis of the current study: that many adults and sighted children are unaware of how to promote high quality play interactions with children with visual impairments.

At a time when there is a movement to include as many children as possible in mainstream schools, it is essential to analyse the experiences of children with visual impairments in these contexts. The only way of achieving this is to actually look at what happens in the real classroom situation. This is the line of investigation into which the recent studies mentioned above fall. It is also important to consider the diversity of the population of children with visual impairments who may be in mainstream settings. This will be done in the present research. Most importantly, in terms of guiding future intervention, the current study will address the fine details of play interactions involving sighted and children with visual impairments, in order to identify processes of cause and effect.

2.5 Recent UK policy developments

In this section I concentrate on the policy issues which underline the current educational climate and its implications for children with visual impairments. In the present research I aim to offer practical strategies and guidelines on how to pursue inclusion positively.

Currently, the decisions made concerning educational placement and provision for children with special needs are determined by the 1993 Education Act which introduced the Code of Practice. However, the actual legislation has been determined by changes of thinking, recommendations from reports and lobbying from parent groups. With time, there has been a shift from grouping pupils according to their disability and segregating them in special schools, to identifying individual needs of a wide range of pupils and integrating them in ordinary schools whenever possible.

With the publication of the Warnock report in 1978, there was an attempt to focus on the individual needs of pupils instead of using labels. The report mentioned that the educational aims are the same for all children and those who may present difficulties in achieving such aims should have their individual needs identified and receive appropriate help. Most of these children would, however, stay in ordinary schools and three different forms of integration were distinguished. These include locational, social and functional integration.

Locational integration refers to the teaching of pupils with special needs in the same physical environment as their peers; social integration refers to pupils with special needs having the opportunity to interact with their peers during intervals, assemblies, etc.; and functional integration refers to the participation of pupils with special educational needs in mainstream classes in which they follow the same aims as their peers (Allan, 1994).

As a result of the Warnock Report and the 1981 Education Act, there was a movement away from the statutory categorisation of pupils according to their handicap and segregation and an improvement in practice, with parents being involved in decisions and expecting better quality educational provision from the education authority, with a higher number of children being integrated into mainstream schools (Ridell and Brown, 1994).

More recently, the aim of including children with special needs in mainstream environments has been reiterated and reinforced with the introduction of the Green Paper - "Excellence for All Children" (DfEE, 1997). The term integration has been replaced now by "inclusion", meaning the opportunity for children with special needs to be part of everyday life in mainstream schools.

Initially, one of the aims of including children with special needs in mainstream settings was to improve their opportunities to socially interact and establish friendships with other children. However, it is commonly accepted that the simple presence of peers may not be enough for the children with special needs to establish social contacts with peers (Erwin, 1991; Hepler, 1994).

On the other hand, developing research with the aim of comparing opportunities for social interaction in mainstream and segregated settings poses many difficulties, especially concerning sample selection. It becomes rather complicated to distinguish what happens due to the environment and what happens due to the children's characteristics. Besides, how could children be assigned to similar educational programmes which only differed in terms of being mainstream or segregated (Guralnick, 1990a)? Erwin (1993) carried out a study with the aim of comparing the social participation of children with visual impairments in specialized and integrated settings. She did not find significant differences between the settings and refers to the difficulty of conducting research with this group of children, mainly due to the variability presented by the children and to the reduced number of children involved in the study.

However, it has been demonstrated that there are advantages in including children with special needs in mainstream schools (Guralnick, 1990a). Arguably, mainstream settings are more stimulating and responsive to children with special needs; they are also more demanding for these children and recent research shows that the most effective cases occur when children with special needs are fully included i.e. when they join in a group consisting primarily of children without special needs (Guralnick, 1990b).

Guralnick and Paul-Brown (1977) also observed that children without special needs adjusted their communicative skills when interacting with children with

special needs. Children achieved this by using fewer words, producing a shorter mean length utterance and repeating utterances. This fact can be an advantage in the sense that it allows children with special needs to have access to simpler and easier communication with peers. However, what are the implications for the self-esteem of children with special needs? And how does this fact translate to children with sensory impairments? Children with visual impairments will depend on language to gather information about their environment. If the peers perceive the difficulties presented by children with visual impairments as a lack of understanding then they will tend to use fewer words and repeat utterances more often, which is very unlikely to be what children with visual impairments need. Besides, when children adopt a more adult role in their interactions with children with special needs they are preventing the occurrence of child-to-child interactions on an equal partnership basis.

It has been demonstrated that children with special needs present more solitary play, appear to be less interested in peers and are less socially interactive (Guralnick and Groom, 1987). Roberts, Pratt and Leach (1991) observed that children with special needs, besides interacting less with peers and being more solitary in play, also engaged less in classroom activities and more in interaction with adults.

Beckman and Kohl (1987) designed a study with the aim of comparing the interactions of children with and without special needs in integrated and segregated settings. They observed that children without special needs presented more positive interactions. On the other hand, children with special needs presented less positive interactions independently of what settings they were in. They also presented more indiscriminate or investigative play and less pretend or functional play. However, these authors observed that both groups of children presented more interactions in integrated settings than in segregated.

Hundert and Houghton (1992) examined the effectiveness of a class social skills programme in promoting social interaction of children with special needs in mainstream pre-schools. These authors observed that children with special needs improved their level of positive social interaction to a similar level to that presented by the children without special needs. However, these improvements were only observed during the training period and were not maintained after that.

Generally, the less interactive behaviours presented by children with special needs are due to difficulties in accessing or interpreting social cues and also to difficulties in processing contextual and behavioural changes (Guralnick 1990a). What is striking is that children with special needs present difficulties in social competence that far exceed what would be expected from their development in other areas.

Social competence is obviously vulnerable to the impact of a visual impairment (Warren, 1994). Social behaviour is shaped in various ways, across a range of social contexts, through the day-to-day processes of living and learning together with other people at different stages of maturity. Social development is much more than simply acquiring skills and competence in the context of relationships with peers, siblings or caregivers. Importantly, children are also establishing who they are. Vision has an important role in enabling children to imitate others and to be aware of social situations.

Critical factors for the development of social competence include how far a visual impairment limits social experience, reduces the range of social interactions with peers, sighted individuals and wider social groups, or evokes overprotectiveness in some adult caregivers. Families react in different ways

and childhood visual impairment inevitably puts additional pressures on a family unit.

When children with visual impairments join a mainstream class it is important to take into account the possibility of overprotection, of teasing, of social ostracism, or of bullying. The ability of a child with a visual impairment to understand the social behaviour of others, to 'read' social contexts and to behave in a way which promotes acceptance is important.

On the other hand, children with visual impairments may present some behaviours which may reduce personal effectiveness and opportunities for social integration. The term 'mannerisms' (sometimes referred to as 'blindisms') covers a wide range of behaviour, many of which inhibit normal social interactions or interfere with the child's attention to an important information or events. They include rocking, eye poking, headshaking, bouncing, clapping or handshaking. Mannerisms have been associated with different conditions: very low levels of sensory stimulation; overstimulation or stress; constraints on environmental exploration or interaction. Thus, mannerisms may be a response to either boredom, arousal, or overwhelming social demands (Warren, 1994).

Read (1989) observed children in pre-school mainstream settings and refers to difficulties of blind children in maintaining relationships, including problems with face contact and gestures such as nodding or shaking heads. Children with visual impairments had difficulties in verbal skills and interactive behaviours when having to recognise peers, offer help and complement peers. Strategies of intervention that can help blind children develop social skills include teacher and peer instruction, careful planning of activities to involve the blind child as a vital member of the group, and encouragement from adults to initiate conversation rather than being continually corrected by adults.

Workman (1986) looked at teachers' verbalisations and how these relate to the social interaction of blind children. The strategies that were most related to interaction with peers were describing the social environment and giving direct and indirect prompts. Workman saw the teacher as a mediator of the social environment.

MacCuspie (1992) carried out research to analyse the social acceptance and interaction of children with visual impairments in integrated settings. The perceptions of children with visual impairments, sighted children and teachers were considered. MacCuspie found that the perception of friendship was different for the two groups of children. Children with visual impairments considered their friends to be those who helped them or did not make fun of their eyesight. She also found that sighted children reciprocate actions of their peers but they feel uncomfortable in reciprocating negative actions (such as hitting) of children with visual impairments. Sighted children also felt that boys with visual impairments chose to play with girls more often than sighted boys would (MacCuspie, 1992).

MacCuspie also found that teachers' perception of their role was to prevent children from mistreating each other and that is the child's responsibility to make their own friends. Therefore, they saw the development of friendship as a spontaneous and natural process of childhood. They also thought that the absence of abuse to children with visual impairments was an indicator of their acceptance rather than the presence of positive social experiences. MacCuspie (1992) found that there was a lack of communication between class teachers and teachers for the visually impaired. Another aspect observed by MacCuspie was that the specialist teachers did not attend to situations when children had opportunity to interact socially and that children with visual impairments had less

opportunities to interact with peers because they took longer to complete their school work (MacCuspie, 1992).

It is extremely important that when children with visual impairments start school there is time and opportunity for them to interact with other children. This may seem evident, but these children may have so many specific skills to learn (eg. Braille, touch-typing, mobility, visual training, etc) and so many experts working with them that there is a danger of becoming too dependent on special education and of forgetting the importance of free activities and social relationships with their peers. Another aspect, which is also commonly forgotten, is the preparation of the peer group to receive a child who has a handicap.

Collaborative planning between staff involved is also important to ensure the efficacy of support provided to children with visual impairments in mainstream settings. In a study carried out to investigate the efficacy of this support, it was found that more than a third of children with visual impairments attending primary mainstream schools did not have access to an educational experience equivalent to their peers (Dobbins and de la Mere, 1993). These authors refer to the importance of planning together and beforehand, with the objective of identifying tasks that are included in the lesson, which tasks will present difficulty for an individual child and what adaptations or modifications will be necessary.

Erwin (1991) refers to the importance of input from a teacher of the visually impaired, a team effort involving all staff, the use of teaching strategies that take into consideration the importance of social interaction with sighted peers, the involvement of family and community, and the need to educate all children about individual differences.

The development of social competence by children with visual impairments is of major importance and should not be neglected by teachers in both mainstream or segregated settings. Although it has been demonstrated that there are advantages in including children, it is essential to make inclusion work. As Guralnick mentions, the current issue is not if inclusion works but how we can best maximise its effectiveness (Guralnick, 1990a). He also mentions that the greatest challenge to educators is the willingness and ability of all parties involved to maintain an attitude of flexibility and communication to ensure the effectiveness of inclusion.

Successful inclusion greatly depends on effective collaboration between specialist and mainstream staff, and even when children may be faced with difficulties in terms of curricular inclusion, staff involved in the process are of the opinion that the advantages of social inclusion are far greater for the child (Allan, 1994).

In summary, existing research evidence on the effects of inclusion on children with visual impairments is fairly limited. It acknowledges the important role of adults to mediate the social environment, to collaboratively plan appropriate teaching experiences and to adapt or modify curricular tasks to allow access to information usually obtained by visual means. However, how exactly should this mediation should take place is still an important question that needs further investigation.

2.6 Research methodology

Designing research with such a heterogeneous group of children is a complicated task. Whenever researchers try to carefully select their sample according to tight criteria they end up developing one or a small group of case studies. Case studies are a very important way of researching in this field. Although they have limitations in terms of generalising findings, they often show important examples that are meaningful for many practitioners. Furthermore, whenever researchers try to control variables very carefully there is the disadvantage of the research having limited practical implications.

One of the difficulties in developing research with children who have visual impairments is the selection of a sample. All children are different, but children who have visual impairments are an extremely heterogeneous population group. This difficulty is compounded by the fact that they are a small minority, with the consequence that even when children with only one specific condition are considered we would not be able to construct a homogeneous group. Especially if the focus is on young children this is further complicated by the fact that it is difficult to foresee if children may have additional difficulties and to what level their vision is likely to develop (Workshop Reports, 1990).

Another difficulty concerns the matching of children with and without visual impairments for different research purposes. How can we be sure that when a blind child and a sighted child perform a task at a certain specified cognitive level it actually makes the same demands on both children (Workshop Reports, 1990)?

When considering a larger group of children with visual impairments, it is important to take into account the existing variables. Apart from variables such

as age, gender, socio-economic status etc., children with visual impairments bring to research another set of variables such as eye condition, visual acuity, field of vision, presence of additional handicaps, age of onset, etc.

Another difficulty comes from the fact that whenever we focus on children in mainstream settings it implies a very time consuming period of data collection due to the fact that usually there may be only one child with a visual impairment in any one mainstream school.

In the present research I intended to analyse the experiences of children with visual impairments in a variety of situations accepting its variability and complexity. Although this is a time consuming task, it has the advantage of practitioners finding it more accessible to relate to cases that show the variability that they encounter in their everyday settings.

In order to carry out research accepting the variability and complexity of situations in which children with visual impairments are involved, a multi-method approach by using some quantitative and qualitative methods was selected. In qualitative terms it could be described as ethnographic, naturalistic and observational while in quantitative terms, the research could be described as descriptive and correlational.

In using qualitative methods researchers are committed to understanding social phenomena in a way that considers settings and people globally and that follows a flexible research design (Taylor and Bogdon, 1984). Ethnography is characterised by an in-depth analytical description of an intact cultural scene (Borg and Gall, 1983). Usually it refers to forms of social research characterised by having a significant amount of the following features: focus on exploring the nature of certain social phenomena; tendency to deal with data that

has not been coded at the time when it was collected; involvement of a small number of cases and data analysis that includes interpreting meaning and functions of human actions (Atkinson and Hammersley, 1994). Ethnography does not reject the use of quantitative data, in fact, often qualitative and quantitative methods are both used. However, it rejects the assumption that quantitative methods are the only or the most important way of investigation.

Ethnography tends to be inductive and is usually characterised by the researcher taking a more or less participatory role, by focusing on natural settings and by having close links with the practice of education (Scott and Usher, 1996). In the present research, some aspects of ethnographic methodology are used together with a deductive hypothesis-testing framework.

One difficulty that emerges when developing naturalistic studies is that there are many variables in each particular setting and it becomes complicated to isolate the effects of a specific variable (Guralnick, 1986). However, there are advantages of using more ethnographic and naturalistic studies as they are able to integrate information from different settings and this is particularly appropriate to investigate real world conditions (Robson, 1993).

In quantitative terms, the present research is descriptive in the sense that it attempts to show how children spent their time in different forms of play and social interaction. Correlations were also used to measure the significance of relationships between some variables which during the study emerged to be of interest for further analysis. A significant relationship between two variables will mean that the two variables will tend to vary consistently (Greene and D'Oliveira, 1982). Correlational research is not in itself as rigorous as more experimental approaches, it has less control over variables, may identify deceptive relation patterns and the correlation index is limited by the sensitivity

and reliability of the instruments used for data measurement. However, it is appropriate to use when there is a need to discover or make clear relationships between variables and it allows for the measurement of variables and their relationships simultaneously. It also gives us information about the degree of relationship between variables in such a way that cannot be achieved by other means (Cohen and Manion, 1980).

The present research relies mainly on observation as a data collection strategy. In doing so we have to be aware of the effect that observers may have on the people being observed. Some of these effects can take place during data collection due to the presence of an extra person in the setting. Procedures need to be carefully planned and clear to all those who are involved in data collection and it is advantageous to observe a few sessions over time rather than only one (Wragg, 1994; Pelligrini, 1996; Foster, 1996).

When using observation pro-formas for quantitative analysis, it is important to define categories clearly so that the observational task is objective and therefore reduces observer bias, to give observers little information concerning the objectives of the study, to train observers to a high level of reliability and objectivity and to design user-friendly observation forms (Borg and Gall, 1983). It is also important to check the reliability of observation procedures through the assessment of inter-rater agreement, which was done in the present study using a method devised by Fleiss (1971).

To analyse some aspects of the data, behavioural events were used as units for analysis. In this way, a specific event was coded every time it occurred and all the events in that category were considered for analysis. This strategy has the advantage of giving the possibility to gather a larger amount of events than the amount of targeted children and to investigate what happens when that specific

event occurs (Robson, 1993; Brown and Dowling, 1998). This also mitigates against the problem of small samples which characterises research in the field of visual impairment. In other words, the unit of analysis is shifted from the subject to categories of observed behaviours.

3. Research Design

3.1 Introduction

In this section the main research questions of the study are outlined as well as the theoretical framework for the research. The major hypotheses of the study are also considered in relation to the design of the study including the description of how each hypothesis will be tested and what methods will be used.

Previous research in the field of visual impairment tended to focus on a very small group of children. In some occasions this was due to the fact that researchers focused on the role of vision in children's development, in other occasions because researchers were trying to control variables so that they could make reliable comparisons between groups of children. This meant that researchers were mostly looking for children who fitted strict selection criteria such as: no sight and no additional difficulties.

For example, Bigelow (1986) carried out a study on reaching in blind children with a sample of five children; Kekelis and Sacks (1992) developed a study on the effect of visual impairment on children's social interactions in mainstream settings with a sample of six blind children; Workman (1986) observed four blind pre-school boys interacting with their teachers; and Read (1989) examined the social skills of three totally blind girls.

If visual impairment is already a low-incidence disability, the children studied by previous research have been sub-selected further and constitute a minority

of even this population. Most of this research may have helped us understand the role of vision in children's development but it did not help us understand the variability, complexity and potential of the whole population of children with visual impairment, since it has focused principally on sub-sets.

Also, the previous research on play of children with visual impairment focused much more on how children with visual impairments played on their own with a prescribed set of toys in decontextualised settings (in vitro). The results tended to find discrepancies between the play of this group of children and that of children with normal sight (Tait, 1972a; Parsons, 1986b). The only studies that looked at this group of children in their everyday settings (in vivo) refer to the importance of the role of adults in mediating social situations, in adapting the environment and also the need for more research in this area (Kekelis and Sacks, 1992; Preisler, 1993). Again, some of these previous studies were developed with very small numbers of children who had very severe visual impairments and no additional difficulties.

The present research focuses on aspects of social interaction, play and language of children with visual impairments in everyday mainstream school settings. The present study looks into the broader group of children with visual impairments in their natural contexts so that teachers could relate this research to their own classroom experience. It intends to observe these children in mainstream settings during play and to analyse how they interacted with their peers, how they overcame possible obstacles, how the environment influenced what happened, what language input was available, what assistance or scaffolding they needed, etc. This project was intended to provide ideas and guidelines for how to promote opportunities for better social interaction between children and adults or peers.

Whenever we try to understand behaviours it is important to observe them in the context in which they actually occur. In focusing on the interrelation between behaviours and the context, we do not just describe the behaviours of one particular child but we also need to describe the setting and the behaviours of others in relation to that child (Pellegrini, 1996). It is a fundamental principle of qualitative research based on socio-cultural psychology (Vygotsky, 1978; Rogoff, 1990) that the unit of analysis moves from the child and or task to interactive processes.

Therefore, in order to describe play and social interaction presented by children who have a visual impairment in mainstream schools in encounters with adults and peers, children with visual impairments were observed during play sessions with their sighted peers. These sessions took place in their natural physical and social settings and occurred at what teachers called "choosing time" in the classroom. Each child was observed in three different sessions.

One aim of the study is to describe play presented by this group of children, the obstacles and difficulties they faced when interacting with others and the strategies used by the child, adults and peers.

Another aim of the study is to describe the use of language between children with visual impairment, adults and peers as a means to social interaction. The use of video camera means that it is possible to transcribe what happens and what was said in each session and analyse these transcripts later by using a framework of social functions' categories.

In this study it is also possible to explore possible correlations between the characteristics of children with visual impairments and different aspects of interaction enjoyed with peers or adults.

Due to the fact that children will be observed in different contexts, it is possible to explore the effect of these contexts on children's social interactions, in particular the strategies adopted by adults in promoting social encounters.

In a small exploratory study, two children were also observed in structured sessions where they were asked to perform a task with a partner. In this study there were three different tasks and three different partners. The observation of children in this situation allowed for an analysis of social interaction between children when trying to perform a particular task together. This was the only study that required a control of peers involved and tasks to be performed.

In summary, this research will lead to the description of play, interpersonal strategies, and language as a basis for social interaction and to the identification of factors that foster social interaction. Ultimately, the results of this research will be a source of information to provide guidelines on how to promote social interaction in mainstream settings.

3.2 Research questions

The present study intends to answer and explore the following questions:

- What quality of social interaction is experienced by children with visual impairments in mainstream schools?

This question is very important at a time when there is a movement towards including as many children with special educational needs as possible and with increased responsibility for mainstream schools as set out in the Green Paper -

"Excellence for All Children" (DfEE, 1997). Although it is agreed that inclusion can have a positive effect on the social development of children with special educational needs, it is also understood that physical proximity in itself does not guarantee positive social interaction with peers and up to now there is no evidence of the effectiveness of direct attempts to promote social interaction between these children and their peers in mainstream schools (Erwin, 1991; Allan, 1994).

Besides, adults and sighted children may face a variety of obstacles when trying to interact with a child with visual impairment. These obstacles may originate from the lack of understanding of the child's behaviours or interests. A number of authors found that when interacting with children with visual impairments, sighted adults often have difficulty in establishing what interests the child and therefore provide less stimulation and more directives to these children (Urwin, 1983; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). Whilst language holds the key to effective compensatory intervention for children with visual impairments, in fact it is by no means straightforward for adults to provide the kind of rich linguistic inputs to children which they require.

Although assistance from adults can help the child with visual impairments manage tasks that may be frustrating for the child without such assistance, it is important that adults keep in mind that children need challenges and therefore they need to transfer responsibility to the child in small steps. Children with visual impairments can be denied the opportunity due to overprotection and narrow adult expectations. To date there has not been any research looking into how adults attempt to scaffold children with visual impairments.

In the present research, I will be focusing on what kind of strategies are used by children with visual impairment to gain attention from others, control others'

behaviours, make requests and also what kind of input they receive from others as children, their peers and adults interact in a school setting during play activities. In order to investigate the quality of interaction in mainstream settings, this study will focus on:

- strategies used by adults to propose appropriate activities for children with visual impairments,
- identifying obstacles in social interaction and strategies used by adults or peers to overcome them,
- adults' and peers' use of language to regulate and provide information to child with visual impairment,
- amount of time spent on play,
- time spent in interaction with others.

Another important aspect is that sighted children who are liked by other children have an understanding of their peers' interests, activities and goals which helps them to join in a peer group and respond appropriately. They also are quite skilled in dealing with conflict situations where again they need to understand others' expectations. This obviously poses obstacles for children with visual impairments as it is more difficult for them to gather information about what is happening around them. Besides, the presence of a sensory impairment may cause anxiety and defensiveness in a child's peers and this may prevent the natural initiation of social interaction between children (Hartup, 1983).

These obstacles in interacting socially with others and in gathering information from their environment brings us to another question, i.e.

- What obstacles do children with visual impairments face when trying to solve conflict?

In order to investigate this issue, the study will focus on identifying obstacles to social interaction and strategies used to overcome them. This also includes the analysis of conflict situations. Again, this analysis focuses on strategies used to overcome obstacles to the children's interaction and language use.

- How do different physical and social contexts influence the social experience of these children?

The aim is to identify contextual factors which promote social interaction between children in mainstream settings. Whenever there is an attempt to facilitate social interaction in mainstream settings special attention is given to contextual factors and usually this involves a careful planning of activities, materials, space and strategies used by teachers (Hundert and Houghton, 1992). Some recent studies carried out with children with visual impairments (Kekelis and Sacks, 1992) refer to the influence of contextual factors on children's ability to participate in classroom activities and interact with peers. Apart from the selection of activities, materials and strategies, the number and characteristics of peers was identified as another important factor that has an effect on children's interactions.

Another contextual factor is the language input that children with visual impairments are exposed to. The fact that adult speech directed to children may be inhibitory rather than facilitative shows that some obstacles to the development of children with visual impairments are environmental in origin (Andersen, Dunlea and Kekelis, 1993).

In order to investigate the effect of context on social interaction, different groupings of sessions are made for analysis, according to the amount of time spent on play or in interaction with others, or in isolation, etc. Correlations

between the child's characteristics and different aspects of the interaction are explored.

- How can we improve social experiences of children with visual impairments in mainstream settings?

This question will be answered by identifying the factors that determine if a situation is more or less likely to be successful in terms of social interaction with peers. As the focus is on the overall contextual situation and its effect on the child's behaviour, the suggestions gathered from the study will certainly be of much interest to adults working with children with visual impairments. This will also allow the identification of strategies that can help children with visual impairments coping in social interaction situations.

- What do children with visual impairments experience when working in pairs on pre-determined tasks?

To answer this question children are observed in pre-determined tasks while working in pairs. Azmitia (1988) observed children working in pairs and concluded that the less experienced children gained from interacting with more experienced partners and that this gain was mediated by the quality of verbal interaction. When a sighted child works together with a child with a visual impairment there is a mismatch between the information that is available to both children which puts them at different levels of ability to perform the task.

3.3 Theoretical framework

A multi-method approach was selected as the aim was to analyse real life situations and it is common for this kind of study to produce data which can be analysed both qualitatively and quantitatively (Robson, 1993). This offers some flexibility in terms of methodological strategies and methods used and the possibility to return to the data for further analysis of aspects that emerged as relevant during data collection.

Hammersley (1992, in Scott and Usher, 1996) has challenged the distinction between qualitative and quantitative methods as it is assumed that they are opposed approaches. He points out that all types of data analysis have inductive and deductive elements, that the use of natural versus artificial environments depends on what is being observed, that all observers have an effect on what is being observed and that the assumption that qualitative analysis focuses on meanings, while quantitative analysis focuses on behaviours, is not necessarily true (Hammersley, 1992 in Scott and Usher, 1996).

In traditional ethnography usually a small, homogeneous and geographically specific study site is investigated (Goetz and LeCompte, 1984). Ethnographers usually concentrate on a single research setting and describe in detail a total phenomenon and attempt to represent the views of the subjects of investigation (Goetz and LeCompte, 1984). However, ethnographers take different positions on different methodological issues such as the role of the observers, data collection instruments and the adoption of deductive or inductive data analysis strategies (Scott and Usher, 1996).

In a way, the approach adopted here was ethnographic in character in that it aimed to understand and describe the experiences of a group of children in the

context where they naturally occur with no attempt to control what happens. This approach offers the possibility to analyse data before all the data has been collected and to adapt or refocus the study according to relevant issues that emerge during data collection (Brown and Dowling, 1998).

However, the approach selected for the present study differs in some respects from the traditional ethnographic approach. The present study did not concentrate on a single research setting as children with visual impairments attended different schools. It seemed important to accept the variability of situations in which these children are exposed to for the practical implications of the study. On the other hand, children were not expected to answer questions in order to represent their view of the observed situations.

Also, the existing research literature has provided a number of important hypotheses which have guided the work from its start. So the study did not proceed by allowing all of the issues to emerge from the data as they were collected.

One of the methodological issues on which researchers take different positions is the participatory role of the observer. This can vary from complete participation where the researcher takes on a duty and conceals his role as researcher in order to have an insider's view of the phenomena to a non-participant role where any attempt is made to minimise any effect that the observer may have on the phenomenon being observed (Robson, 1993; Scott and Usher, 1996; Brown and Dowling, 1998).

In the present study a role of observer-as-participant was adopted in which the observer does not conceal their role as researcher, nor tries to experience the activities for themselves. Instead, the observer stays in the natural context and

makes close observation of the phenomenon being investigated (Brown and Dowling, 1998). This seemed the most appropriate method for the particular phenomenon being investigated in this study.

In a way it would be artificial for an adult to try and experience play activities of young children or to take a role as a teacher or assistant in such a number of different settings. The observer's complete participation would have an effect on roles assumed by different children, behaviours observed and it would not be what normally happens during "choosing" time in mainstream schools. Although, sitting at a certain distance from the children for a considerable period of time and using a video camera may also have an effect on what is being observed, it is in a way a much more familiar situation for children (Edwards and Westgate, 1987; Brown and Dowling, 1998).

Another methodological issue where researchers take up different positions is the data collection instruments, which vary from unstructured to semi-structured (Scott and Usher, 1996). In the present study, an observation schedule was used to code the data. Although this observation schedule was devised prior to data collection, it was refined after being used with data from a pilot study. In the natural context where observations were made, only filming took place, and the observation schedule was used after a few sessions were videotaped. However, there was flexibility to return to the data and analyse further particular issues of relevant interest.

One of the characteristics of ethnography that was of much interest for the present study is its linkage with the practice of education. The ultimate aim of this research was to provide meaningful guidelines to practitioners that would contribute towards the promotion of social interaction between children with visual impairments and their sighted peers in mainstream settings.

On the other hand, quantitative methods were also used to describe the amount of time children spent in different levels of interaction, different kinds of play and to investigate relationships between characteristics of the children and some aspects of social interaction and play.

Therefore, to analyse the experiences of children with visual impairments in their natural contexts, the following hypotheses and focuses of research were set from the beginning of the research, namely:

- *Social interaction between children with visual impairments and their peers or adults are faced with obstacles.*

This is analysed qualitatively by pin-pointing obstacles that occurred during social interaction. This is achieved by using a recursive data processing strategy to analyse transcripts of the sessions.

- *Children with visual impairments experience a variety of obstacles to social interaction which are not determined exclusively by within-child factors. Contextual factors play a major role in promoting social interaction.*

This is analysed qualitatively as a follow-up from the first hypothesis, i.e. obstacles can be grouped and compared by looking into the context in which they occurred. Tables and matrices are created for this purpose. It is also analysed by listing sessions according to the time spent in play or in social interaction with others and again looking into the physical and social context of the sessions.

- Children with visual impairments will seek interaction with adults as they are more effective in mediating the child's physical and social environment.

This is analysed qualitatively by using a recursive data processing strategy to identify and describe situations when children seek interaction with adult's in order to mediate their social and physical environment.

A small exploratory study was also designed in order to investigate interactions between children when trying to perform a pre-determined task together. The approach taken for this study was different from the approach taken for the main study. The exploratory study took place in a separate room that was familiar to the children, the targeted child was observed performing the task with a female peer, a male peer and an adult in three different tasks which included materials usually used in playgroups or reception classes in mainstream settings. Concerning this study the following hypotheses are considered:

- Peers and adults will have difficulties when interacting with the child with visual impairments to perform a task together and successfully.

This is analysed by using a recursive data processing strategy to identify difficulties that occur when the child was observed in more structured sessions attempting to perform a pre-determined task with a partner. These difficulties are then described, grouped and compared.

- When performing a task together, adults will adapt and scaffold the child's activity more effectively than peers.

This is analysed by comparing strategies used by adults to scaffold the child with those used by the peers of the child with visual impairment. A matrix is created

to represent this information. A gloss technique is also used to illustrate how adults scaffold the child with visual impairment.

Throughout the study there were other hypotheses or focuses of analysis which emerged from the data. These are:

- *Strategies used by adults and sighted children have a significant impact on the quality of interactions with children with visual impairments.*

This is analysed qualitatively by using a recursive data processing strategy to identify strategies used to gain attention and to introduce an activity. Strategies will also be identified as more or less facilitative in promoting play and social interaction. Tables are created to represent this information.

- *When children with visual impairments are used as a resource, the requests made to them tend to focus on the child's own activity, wishes or feelings.*

This is analysed by splitting the resource categories into sub-categories which were created, based on the different types that emerged from the data. Each occurrence was then put into one of the sub-categories. The same was done for the categories considered when the child with a visual impairment uses others as a resource, which allowed then to compare the percentage and type of requests made to and from the children with visual impairments.

- Children with visual impairments are faced with obstacles when trying to solve conflict situations.

Conflict situations are identified by using a recursive data processing strategy. Then a table is created taking into consideration the context in which the conflict situation took place, what originated the conflict and how it was solved.

- The age and degree of visual impairment of a child are factors that influence the presence of an adult.

This hypothesis is investigated by using correlational statistics to analyse the following points:

- relationship between age and time spent with an adult,
- relationship between the degree of visual impairment and time spent with an adult.

- The age and degree of visual impairment of a child are factors that influence the control of activity of and by others.

This hypothesis is investigated by using correlational statistics to analyse the following points:

- relationship between age of the child and frequency of situations when the child was controlled by adults or peers,
- relationship between degree of visual impairment of the child and frequency of situations when the child was controlled by adults or peers,
- relationship between age of the child and frequency of situations when the child was able to control adults or peers,
- relationship between degree of visual impairment of the child and frequency of situations when the child was able to control adults or peers,

- The age and degree of visual impairment of a child are factors that influence the use of others as a resource or being used as a resource by others.

This hypothesis is investigated by using correlational statistics to analyse the following points:

- relationship between age of the child and ability to use peers as a resource,
- relationship between age of the child and ability to be a resource to peers,
- relationship between degree of visual impairment of the child and ability to use peers as a resource,
- relationship between degree of visual impairment of the child and ability to be a resource to peers.

- Pretend play situations pose difficulties to children with severe visual impairment.

This is analysed by selecting all the pretend play episodes and creating a table to present information concerning the type of pretend play observed, role of the child with visual impairment, list of difficulties observed and factors that promoted pretend play.

In previous literature in the field, it is mentioned that children with visual impairments in mainstream schools tended to seek a quiet space and to interact more with adults (Kekelis and Sacks, 1992; Preisler, 1997). This may be due to the fact that adults can more easily understand the needs of these children and are able to adapt the way they interact with them. For instance, children with visual impairments rely on language to obtain some of the information from

their environment. Generally, adults can describe the environment and explain events. Sighted children, especially young children, do not have the necessary language skills to do so and therefore their interaction with others depends heavily on strategies such as watching, giving and showing objects.

This became apparent throughout the study when young children with visual impairments or children who had a severe visual impairment seemed to spend more time next to or with adults. Therefore, it is expected that the younger the children are, and the more severe a visual impairment they have, the more they will seek and depend on adults for interaction with their environment. It would seem that adults have an important role in mediating and facilitating social interaction between the child with visual impairments and the sighted children.

As children will be observed in play sessions, some of the children will play with their peers without the presence of an adult. In any case, and as referred to in previous research, the organisation of the physical and social context will influence the child's interaction with others. Therefore, it is expected that some contexts are more facilitative than others.

Throughout the study, patterns emerged such as younger children and/or children with a severe visual impairment being exposed to a more directive style of interaction. It would seem that in view of the difficulties that other people have in understanding the interests of the child with visual impairment, they tend to be directive towards the child and introduce topics related to the child's own activity. This tendency to concentrate on the child's activity also emerged when the child with visual impairments was a resource to others.

3.4 Methodology

The present research gathered information from three different contexts, namely: from playing in mainstream settings, playing at home and working in pairs on pre-determined tasks.

All of these studies used data that were collected by video recordings of the sessions, other information was also gathered by using parents' questionnaires, teachers' questionnaires and field notes.

3.4.1 Stages of research

The overall stages of research can be seen in figure 3.1. The initial stage of research focused on defining the research questions, exploring the available literature in this research area and deciding what observation methods to adopt. To observe children with vision impairments in their natural environments during play and have the possibility of analysing children's play, language and interactions within mainstream classrooms, the use of video recordings offered considerable advantages. This enables collecting data that can be analysed at a later stage and also to replay the recordings as many times as necessary.

Analysing data at a later stage has the advantage of offering the possibility to focus on different aspects for each session, such as how much time did children spend on a particular form of play or on a particular level of interaction, how successful children were when trying to control others' behaviours, by selecting and analysing different observational strands within the data. On the other hand, to video sessions and analyse them at a later stage is time consuming. Besides, the presence of an observer with a video camera may have an effect on what is being

observed. Observation procedures needed to be refined in order to minimise this effect. It was also necessary to have a pilot phase to test the observation methods and procedures.

Contact was established with a Local Education Authority in order to have access to children with visual impairments to carry out a pilot study. This took up to a month of observations in different settings to test the practicability of observation procedures and techniques for data analysis. Techniques and procedures were then refined.

Further contacts were being established with five other Local Educational Authorities' services for sensory impaired children from the South West of England in order to have access to more children with visual impairments in mainstream settings.

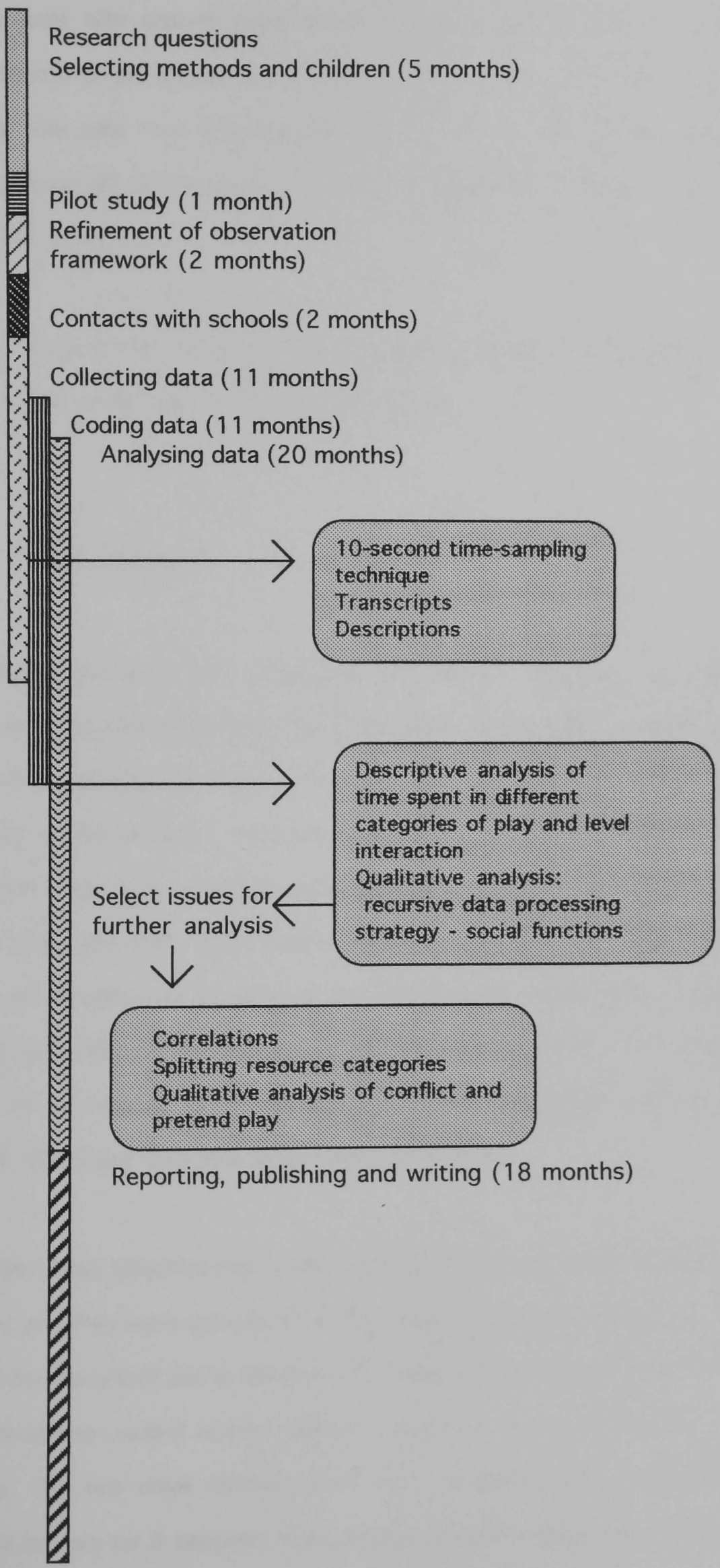

Figure 3.1 - Stages of research

After contacts with schools were established and authorisations confirmed, the data collection phase started and it went on for a period of eleven months. Well before all the data were collected the coding and analysis of data started. The overall process of collecting, coding and analysing data went on for a period of twenty five months.

The final stage of the research was dedicated to reporting the results in several seminars and workshops, publishing and writing.

3.4.2 Pilot phase

To analyse children's play, language and social interaction, a framework consisting of two sets of analyses were developed. The first set consisted of a 10-second time-sampling technique to code the level of interaction and form of play presented by the children. Time-sampling can be an efficient way of gathering information about how much time was spent in different categories of the coding scheme (Borg and Gall, 1983; Bakeman and Gottman 1986; Robson, 1993). The second set consisted of transcribing the session and coding social functions of different behaviours presented (Guralnick and Groom, 1987). A pilot study was carried out in order to refine the techniques used for analysis and iron out any practical difficulties with the observation procedures.

Six children were observed during the pilot phase. Four of them had ages between 7 and 10 and they were videotaped in the playground for three sessions. This was found to be impractical due to the fact that a large area needed to be covered and it was difficult to record sound without interfering in some of the children's activities. The two other children were aged between 3 and 4 and they were observed indoors for 8 sessions. Five of these sessions were then analysed using

the framework to test its practicability. The situation used to observe the two younger children was then planned for the whole sample, i.e. to observe the children during play or "choosing" time in the classroom.

From this pilot phase the framework and observation procedures were refined. Inter-observer reliability concerning the level of interaction and form of play categories was confirmed by using Fleiss's Kappa (Fleiss, 1971). Eleven observers (teachers for the visually impaired) watched an extract of a total of three minutes of video. Three of these observers also watched a longer extract of twenty four and a half minutes of video. Both general agreement and agreement for each particular category was found to be over 90% for all the categories ($p<.001$).

Inter-observer reliability concerning the social function categories was confirmed by using ten different extracts from transcripts. Four different observers analysed the extracts and general agreement was found to be over 90% ($p<.001$).

Given this high level of agreement between observers using the research framework, there was confidence in the measures constructed to proceed with the study.

This refinement included (1) some changes in the categories regarding level of interaction, form of play and social functions presented by the children and also (2) the inclusion of a new set of analyses which consisted of a description of context focusing on play and space features, the group of children in a given play area and the quality of interaction established. The use of a radio microphone was also included to improve audio input. This meant that the targeted child was asked to wear a waistcoat to which a small radio microphone transmitter was attached.

The radio signals were then transmitted to a receiver which was attached to the video camera.

3.4.3 Sample

3.4.3.1 Selection criteria

Six Local Education Authorities in the South West of England were contacted in order to have access to their support services for children with vision impairments. These Local Educational Authorities covered a wide range of demographic variables, with a wide variety of employment patterns and housing types. From the information received from Local Education Authorities services, children were selected according to the following criteria:

- Children who have a visual impairment, they may present additional difficulties but their main impairment is vision.

- Children whose visual impairment was present from a very early age (at least below 18 months of age);

- Children who were attending mainstream schools or nurseries;

- Children whose schools and parents agreed to their participation in the study;

3.4.3.2 Authorisation and confidentiality

Twenty children from four of the Local Education Authorities contacted were selected. The schools attended by the selected children were contacted and authorisation was requested from them and from the parents of the targeted children. Headteachers and all the staff involved with the targeted child were informed about the child's participation in a research project.

The schools were asked to let me know how they wanted to inform the parents of other children who, although were not targeted by the study, could be involved due to the fact that they played with the targeted child. Some schools had a policy of informing new parents that occasional filming would occur in their school for investigation or recording purposes and therefore found that it was not necessary to ask for authorisation specifically for this study. Other schools informed the parents of children from a particular classroom that there would be a study of play for some weeks and that their children could end up being filmed, so that if they had any objection to this they could contact the class teacher. No parent expressed any objection to this.

The names of the children involved, parents and school staff and schools was kept confidential from the general public. Therefore, in documents and publications the names of the children have been changed to protect confidentiality. The parents of targeted children were informed that parts of the filming could be presented in seminars, conferences, training sessions for learning support assistants or teachers, etc. The parents of twelve out of the twenty targeted children gave authorisation for this.

3.4.3.3 Characteristics of the sample

Child	Diagnosis	Sex	Age	Additional Problems Premature	Visual Acuity
1	Optic atrophy due to Haemoptulus Meningitis - 5m	F	5y 5m		3/60
2	Norries disease	M	5y 7m	Learning Difficulties	nil
3	Norries disease	M	4y 11m	Learning Difficulties	nil
4	Aniridia	M	5y 6m		6/60
5	Bilateral microfthalmus with colobomata, nystagmus	F	4y 6m	Language Impairment	6/60 convergent squint
6	Bilateral congenital glaucoma	M	5y 4m		3/24 RE nil LE
7	Retinoblastoma - 13m	M	5y 2m		nil
8	Leber's amaurosis	M	4y		nil Light Perception on LE
9	Cone dystrophy and myopia	M	6y 1m		6/36
10	Marfan's syndrome	F	6y 7m		6/36 RE 6/18 LE
11	Retinopathy of prematurity Totally blind since 3y	M	6y 4m	Premature	nil
12	Ocular albinism	M	6y 4m		1/60 RE 6/60 LE
13	Severely restricted visual fields due to asphyxiation at birth	M	8y 2m		2/60 RE 1/60 LE
14	Retinopathy of prematurity	M	8y 9m	Premature	nil
15	Leber's amaurosis	M	5y 5m		nil
16	Retinopathy of prematurity	F	5y 11m	Spastics Diplegia Premature	6/60 at 1/3 m on RE nil LE
17	Bilateral congenital microphthalmus	F	4y 9m		6/36 alternating squint
18	Retinopathy of prematurity	F	8y 2m	Cerebral Palsy Premature	6/60 RE nil LE
19	Bilateral detached retina due to retinal dysplasia	M	3y 4m		nil
20	Non-specific	M	6y 7m		6/18 RE 6/24 LE Restricted visual fields

Table 3.1 Sample characteristics of the children with visual impairment in the study.

Children:

1 - Elisabeth
2- Martin
3 - John
4 - Mark
5 - Elena
6 - George
7 - Daniel
8 - Anthony
9 - Richard
10 - Kate
11 - Kevin
12 - Louis
13 - Sam
14 - Charles
15 - Tom
16 - Nelly
17 - Christine
18 - Alice
19 - Trevor
20 - Sean

Twenty children were selected to participate in the main study: 14 boys and 6 girls. Eight children are totally blind, although two of them became blind early in their life. One of these children became blind at 13 months due to retinoblastoma and another child became totally blind at 3 years of age although he was severely visually impaired since birth.

Twelve children have residual vision. Some of these children have a very severe visual impairment. Two of the children are borderline cases of visual impairment and they have a visual acuity of 6/18 in their better eye. This means that they can see with that eye at 6 metres what people with normal vision can see at 18 metres. This visual acuity level is often used as the definition of a presence of a visual impairment. However, one of these children's vision varied a lot from one day to another, the other child's vision has just improved recently.

Five out of the twenty children in the sample have additional problems. Two of them were totally blind boys who presented learning difficulties. The other three children were girls, two of them were premature and had cerebral palsy while the other girl has a language impairment.

3.4.4 Collecting data

The present study relied heavily on observational methods. This method was selected as the aim was to observe children in their real environments especially as some of these children were of a young age. Observational methods have an advantage of being direct, i.e. children do not need to express their feelings or views or answer questions from the researcher (Robson, 1993).

The use of a video camera was also selected as this allows the researcher to collect visual and audio information relating to the overall activity in which children are involved. The fact that data are stored in this way allows the use of a recursive data processing strategy, i.e. data can be analysed again and again in order to analyse different aspects of the interaction and to identify obstacles or solutions to them. It would not be possible for an observer to code simultaneously the level of interaction the child is engaged in, the type of play presented, and all the selected social functions of behaviours presented. Besides, it offers the possibility to return to the data for further analysis of aspects that were identified of relevance.

When using observation methods to collect data it is important to adopt procedures that will help in reducing interference from the observer. This can be achieved by habituation of the group to the observer and minimal interaction with the observer during the session (Robson, 1993). Another important aspect is to make sure that the coding system is objective, thus minimising observer recording errors and to check its reliability (Borg and Gall, 1983; Robson, 1993).

In this study different ways of collecting data were used as shown in Table 3.2. Field notes were also made when necessary.

Data collection strategy	Subjects		
	Parents	Teachers or Assistants	Children
Characterisation forms		20	
Questionnaires	10	25	
Observation in school settings			60 sessions 15 hours
Observation in home settings			8 sessions 2 hours
Observation in pre-determined tasks			18 sessions

Table 3.2 - Summary of research strategies and data collected.

Contacts with six Local Education Authorities continued to be made in order to have access to more children. Once the children were selected, meetings with teachers and head teachers took place in order to agree when it would be the most convenient time and day to observe the children. Teachers' and parents' questionnaires were given in order to gather information to reveal the children themselves and about what staff and parents feel about the children.

Children were filmed for three sessions on different days, usually with a one-week interval. This was not always possible due to re-arrangements that needed to be made. As the sessions occurred when children had their usual choosing time in their classroom, the filming needed to fit in with other activities and occasionally a pre-arranged date had to be changed due to illness in the children. A total of 15 hours of film was gathered for the study on social interaction, play and language. Collecting data for this study was a time consuming task as there were almost as many schools involved as targeted children and there was a considerable distance between schools.

Meanwhile data were collected for the studies involving children working in pairs and playing at home. A total of 18 sessions of children working in pairs and of 8 sessions of children playing at home were collected.

While data were still being collected, the process of coding sessions began. Any incident of relevance was also noted for later analysis.

3.4.5 Instruments

Different instruments were used at different stages of the research. In order to gather information about the children two sets of simple questionnaires were developed, one aimed at teachers and the other aimed at parents. The teachers' questionnaire focused on some individual information about the child, about the child's social interaction with peers and their opinion about the child's academic achievement. The parents' questionnaire focused on characteristics of the child's personality (See Appendix 1). Notes were also taken about comments and opinions freely expressed by staff and parents.

A framework to analyse how much time spent in different levels of interaction and forms of play and social functions was developed. The first part of the framework is concerned with the level of interaction and forms of play presented by the children and a 10-second time-sampling technique was used. The categories concerning level of interaction were based on Parten's categories of social participation in play (1932, cited in Faulkner, 1995). However, new categories were added to take into consideration the presence of an adult. As very often there is an extra adult whose role is to support a particular child it was felt that this should be included. The definitions of these categories are given in Appendix 2.

The observation categories concerning the level of interaction and form of play are as follows:

Levels of interaction:

- Isolated
- Parallel
- Co-operative
- With adult
- Parallel with adult present
- Co-operative with adult present
- Others

Form of play:

- Manipulative
- Stereotypical
- Constructive
- Pretend
- Games with rules
- Other play
- Others

The second part of the framework concerns the social functions of the behaviours presented by the children. These social functions were coded from the transcripts and were considered every time they occurred, i.e. the frequency of these social functions was considered. These categories were based on the work of Guralnick and Groom (1987) who analysed peer interaction between sighted children with mild developmental delay and their peers by using a manual for coding peer interaction.

The set of categories used in this study includes behaviours coming from the child and directed to the child, as well as behaviours that were successful and

behaviours that were unsuccessful. The definition of these categories can be found in Appendix 2. This framework focused on the following aspects:

Attention:

- gets attention from a peer
- gets attention from adult
- answers to attention seeking behaviour from peer
- answers to attention seeking behaviour from adult
- fails to get attention from peer
- fails to get attention from adult
- fails to answer to attention seeking behaviour from peer
- fails to answer to attention seeking behaviour from adult

Resource:

- uses peer as a resource
- uses adult as a resource
- is a resource to peer
- is a resource to adult
- fails to use peer as a resource
- fails to use adults as a resource
- fails to be a resource to peer
- fails to be a resource to adult

Control of activity:

- controls peer
- controls adult
- follows peer
- follows adult
- refuses to follow peer

- refuses to follow adult
- fails to control peer
- fails to control adult
- fails to follow peer
- fails to follow adult

Interactive object use:

- gives object
- accepts object
- shows object
- is shown object
- takes object
- has object taken
- fails to take object
- resists to have object taken
- refuses object
- fails to give object
- fails to receive object
- fails to show object

3.4.6 Procedures

Following establishing contacts with schools and confirmation of parents' authorisation, arrangements were made to visit the school and observe the children at their usual choosing time. Dates and times were agreed with the class teacher and a simple explanation of the procedures was given. The questionnaires were also distributed.

One of the characteristics of ethnographic research is the participatory role of the researcher. In the present study this role was one of observer-as-participant, i.e. the aim is not to conceal the presence or activities of the researcher. The observer-as-participant is involved in close observation of the phenomena without attempting to experience the activities for her or himself (Robson, 1993; Scott and Usher, 1996). In this way, the observer intended to disturb the field of study as little as possible and tried to minimise her presence in that natural environment. This was achieved by the observer introducing herself and explaining that she just wanted to watch some children playing. The observer would stay for a while in the room but not initiate interaction. However, if children initiated interaction with the observer she would answer but not stimulate further interaction.

Teachers or learning support assistants were asked to do as they usually do at "choosing" time. The children were then videotaped during the play sessions. They also wore a radio microphone that was attached to a waistcoat which the teacher would ask the targeted child to wear. This was introduced as a way of helping the observer watch specific children without having to get too close to obtain audio input and therefore minimising the interference in the child's activities. By using the radio microphone, the child could move freely in the classroom and sound would still be picked up. The observer would pretend to film for around three minutes before starting, then the child would be filmed for a period of fifteen minutes.

Again, if children initiated interaction with the observer during the filming, the observer would answer the child but in a neutral way (such as 'OK', 'Hum hum'), etc and would not stimulate further interaction. After the fifteen minutes, the observer would stop filming and put the video camera away. When the child

stopped playing, the observer would ask for the waistcoat which held the radio-microphone and thank the child.

Some children refused to wear the waistcoat. In these cases, they were not forced to do so as it was felt that such an imposition would upset the child and therefore have an effect on the subsequent behaviour of the child during the session. The implication of this fact was that some sessions were harder to transcribe and therefore analysis took longer to complete.

The children were observed for three sessions, usually in three different weeks. However, this was not always possible. A few children were observed more than once in the same week, while a few others were observed over a longer period of time due to illness.

3.4.7 Children with visual impairments playing at home

3.4.7.1 Sample

Two of the children who participated in the study focusing on social interaction, play and language were observed at home playing with their siblings and occasionally with their mother as well.

Child	Diagnosis	Sex	Age	Visual Acuity
Daniel	Retinoblastoma	M	5y 2m	nil
Anthony	Leber's Amaurosis	M	4 y	nil - light perception in left eye

Table 3.3 - Characteristics of children observed at home

3.4.7.2 Procedures for observing children at home

Two of the selected children were also observed at home playing with their siblings. These sessions occurred after school time. Again, the observer intended to disturb the field of study as little as possible. Therefore, the observer would stay for about 10 minutes before filming and let the children have a drink and play as they usually do after school time. After this, the observer would start using the video camera without filming for the first 3 minutes and then filmed for 15 minutes.

In the home setting it was not necessary to use the radio microphone. During the filming the observer would proceed in the same way as in the school setting.

3.4.8 Working in pairs on pre-determined tasks

3.4.8.1 Sample

Two of the selected children for the main study were also observed working in pairs on a pre-determined task.

Child	Diagnosis	Sex	Age	Visual Acuity
Daniel	Retinoblastoma	M	5y 2m	nil
Nelly	Retinopathy of Prematurity	F	5y 11m	6/60 at 1/3 m on right eye nil - left eye

Table 3.4 - Characteristics of children observed working in pairs on pre-determined tasks

3.4.8.2 Procedures for sessions on pre-determined tasks

This study took place in a spare room that is normally used by the children during activities such as listening to stories, working with the computer. There was a table in the middle and two chairs, toys on the table (one set at a time) and models on the table as well. Children with visual impairments were observed playing each of the tasks with a male peer, a female peer and a teacher.

The tasks selected made use of familiar play materials that can be found in playgroups and mainstream reception classes. This was selected as a way of exploring the possibilities for children to work together with commonly used play materials. The children with visual impairments chose a boy and a girl to play with and these partners performed all the three tasks. Table 3.5 shows the order of tasks and partners observed.

Day 1	Task - Stairs Boy	Task - Tower Girl	Task - Cube Teacher
Day 2	Task - Tower Teacher	Task - Cube Boy	Task - Stairs Girl
Day 3	Task - Cube Girl	Task - Teacher Teacher	Task - Tower Boy

Table 3.5 - Sequence of tasks and partners.

Children used construction bricks to build stairs against a wall, plastic beakers to build a tower and construction cubes to build a bigger cube made of eight small cubes.

The specialist teacher for the visually impaired would bring the children into the room and explain what they had to do. If the child was going to perform the task with a peer the teacher would introduce the task to both children and then leave.

For the first task, there was a construction board with a wall built on one of the edges. On one of the ends of that wall there were some stairs and there were some spare bricks to build stairs on the other side of the wall. The teacher would show two dolls to the children and explain that both dolls wanted to go up but there was only one set of stairs. The children were asked to build another set of stairs on the other end of the wall. The teacher would ask "Can you make some stairs together? Try to make some like this." and then show them the model.

For the second task there were two sets of plastic beakers. One of the sets was already made into a tower and served as a model for the children to build a similar one with the other set of plastic beakers which was on the table.

For the third task, there were two pretend crocodiles made out of three cubes, a big cube already built with eight small cubes and some spare pieces to build another big cube.

In all the tasks there were only enough spare pieces, bricks or beakers to build another set of stairs, tower or cube.

The teacher was asked to let the children perform the task and only intervene if requested but any interaction should be neutral. At this stage the teacher would not provide information which would help the children to perform the task. Any intervention of the teacher was aimed at keeping the child interested in the task.

The session finishes when the children complete the task or if they could not finish, the teacher intervenes and helps the children. The idea is that the teacher will not at this stage teach the child how to perform the task but will just do most of the task herself so that the children do not feel that they have failed.

When the teacher has to perform the task with the child, the teacher says: "Let's see if we can do this together." Here the teacher tries to teach the child how to perform the task like she would do in a natural teaching situation.

For the structured sessions, descriptions were made focusing on whether or not the task was performed successfully, what difficulties emerged and what strategies were used. A gloss technique was also used to give examples of the main points analysed.

3.4.9 Analysing data

For the study on social interaction, play and language of children with visual impairments, two out of the three sessions of each child were selected for analysis (a total of 10 hours of film). This selection was random with the exception of sessions where a technical problem occurred, such as sound interference.

À priori it was decided to analyse data in terms of how much time children spent in different levels of interaction, forms of play and the frequency of different social functions presented by children. Observer reliability for categories of play, level of interaction and social functions was measured (see section 3.4.10 below). It was also decided to analyse the sessions qualitatively, based on the descriptions and on relevant incidents.

The level of interaction and form of play presented was coded according to the categories devised. Transcripts and descriptions of the sessions were made. Codes from the social functions' categories to be analysed were inserted into the

transcripts. These categories related to attention behaviours, use of others as a resource or being a resource to others, control of activity and interactive object use. In the descriptions the physical layout was shown and aspects such as the physical and play features, the group of children involved and the quality of the interaction established were described.

By using a recursive data processing strategy, additional hypotheses were derived. It was decided that correlational methods would be used to analyse the relationship between the characteristics of the children and different aspects of the interaction. From incident notes, further analyses were developed in order to look closely at a particular issue observed. For example, to look closer at the way targeted children were used as a resource and used others as a resource; analyse the nature of pretend play presented by the children and analyse conflict situations. Tables were constructed to display data based on different contexts and effects observed (Miles and Huberman, 1984; Dey, 1993).

For the study on children working in pairs on a pre-determined task all the 18 sessions were analysed. The duration of these sessions varied from child to child and from task to task. Transcripts were made and a gloss technique used to analyse strategies used and difficulties encountered (Webster, 1987).

For the study involving children playing at home 4 sessions were selected for analysis (a total of 1 hour). Again transcripts and descriptions were made and the same social functions used in the main study were used for analysis of these sessions.

3.4.9.1 Descriptive analysis

A descriptive analysis was made concerning the amount of time spent in each category of level of interaction and form of play and social functions. For the analysis of time spent in different forms of play and levels of interaction, the use of a 10-second time-sampling technique analysis of the amount of time spent in each category was considered appropriate. In terms of level of interaction, this analysis provides information about how long a child was alone, with the adult, next to his or her peers or in collaborative play, etc. In terms of form of play, this analysis provides information about how long a child was involved in pretend play, construction play, etc. It also gives information about time spent not playing.

The descriptive analysis of social functions gives us the frequency of each social function observed. This gives us information about how often the observed child was controlled by others, tried to control others, was a resource to or used by others as a resource, etc.

The information gathered by this descriptive analysis was then used to investigate correlations between the characteristics of the children and different aspects of the interaction observed. It is also used to enter information into tables for further analysis.

3.4.9.2 Correlations

Correlations were calculated to test the relationships between two variables. The Spearman rank correlation coefficient was used through the Statview program (Abacus Concepts, Inc., 1986). This coefficient was used due to the fact that the

different categories observed were not normally distributed. Correlations were made between level of visual impairment or age and level of interaction, resource and control of activity

In order to use the Spearman rank correlation, children were ranked in terms of their chronological age (corrected for prematurity), severity of visual impairment, amount of time spent in different level of interaction categories and frequency of different social functions observed. To rank children based on the severity of their visual impairment the following criteria were used: (1) visual acuity; (2) age of onset of visual impairment; (3) field restrictions, nystagmus or squint.

3.4.9.3 Qualitative analysis

To analyse the data qualitatively, each session was described based on play and space features, the group of children involved and the quality of the interaction established. This allowed the researcher to comment on obstacles, difficulties and strategies used to overcome them and identify factors that contributed to the success of some interactions. These comments were based on the videos, transcripts and descriptions, and their objective is to pinpoint particularly relevant incidents.

Part of this analysis consisted of devising tables and matrices with information on physical context, social context, strategies used and comments on the session. Ranking of the play sessions according to the amount of time spent in different categories of level of interaction and amount of time spent on play was also made to allow a description of the context and identify possible trends.

Another part of the qualitative analysis was achieved by splitting resource categories and analysing them in terms of when the behaviour was directed from others towards the child and when the behaviour was directed from the child towards the others.

Conflict situations were analysed focusing on the motive of dispute, on the behaviours presented thereafter and on the termination of the dispute.

Pretend play was also analysed focusing on the type of pretend play presented, the level of participation of the observed child, the duration of the session, difficulties, factors that promoted play and the role of the adult.

3.4.10 Inter-observer reliability

Inter-observer reliability concerning the level of interaction and form of play categories was confirmed by using Fleiss's Kappa (Fleiss, 1971). Eleven observers watched an extract of a total of three minutes of video. Three of these eobservers also watched a longer extract of twenty four and a half minutes of video. Both general agreement and agreement for each particular category was found to be over 90% for all the categories ($p<.001$).

Inter-observer reliability concerning the social function categories was confirmed by using ten different extracts from transcripts. Four different observers analysed the extracts and general agreement was found to be over 90% ($p<.001$). (See Appendix 3).

3.4.11 Major pitfalls and possibilities

The present study focused mainly on children interacting in their natural contexts. This is an attractive approach as it is easier to relate what was observed to the practice in education for children with visual impairments. However, this approach also has some disadvantages. The main disadvantage is that this approach is very time consuming. One of the practical difficulties presented was due to the fact that children with visual impairments are usually included in different mainstream schools. This meant that for each session filmed a journey was necessary and a lot of time was spent travelling from one school to another across quite considerable distances. This in turn means that not many children can be filmed on the same day.

As observations took place at the usual times when "choosing" time occurred in the classroom it was necessary to plan ahead with the agreement of class teachers. When it was not possible to observe the child when it was previously planned a new arrangement needed to be made which was not always easy due to children's timetables and previously arranged visits to other schools. Also, the fact that some children did not wear the radio microphone meant that some sessions were more time consuming than others to transcribe.

Because of the observation methods used and approach taken, this research is quite expensive. It required the use of expensive equipment (video camera and radio microphone), quite a lot of consumables (videotapes), lots of travelling and time to collect, code and analyse data.

Whenever observational methods are used it is important to be aware of the influence on the subjects of being observed. Although different strategies can be used to overcome this problem it is never possible to know if an observed situation would be different if subjects were not being observed (Robson, 1993). In the present study there was an attempt to overcome this problem by spending some time pretending to film (with the video camera turned off) in order to accustom children to the observer.

Difficulties that usually emerge from ethnographic studies are also concerned with the time needed to develop such research and analyse data. The fact that there was no attempt to control what happens in the observed sessions generates data with a wide set of contextual differences which require careful analysis as there are a number of factors that can be contributing to a certain observed behaviour.

Besides, it often involves subjective observations, which makes it complicated to achieve interrater reliability, which leaves it open to possibilities of distorting findings (Borg and Gall, 1983). In the present study, a multi-method was used and reliable categories were used to analyse some of the data thus reducing this possible effect. A more descriptive and qualitative analysis was used to provide an opportunity to go back to the data and try to explain a trend by providing examples, pin-pointing particularly interesting issues, etc. However, some focuses of analysis were more qualitative than others, for example the analysis of conflict situations and pretend play.

The major possibility offered by this kind of study is the fact that a wide range of situations with a diversity of children with visual impairments in mainstream schools was gathered. Its analysis is of major importance for anybody involved in

the educational support of children with visual impairments and the findings are easy to relate to educational practice.

The methods used were time consuming but they offered an opportunity to retain data in a format that allows further and further analysis without being obtrusive to the subjects being observed. This meant that apart from the initial hypotheses, other hypotheses and focuses of analysis emerged from the data and the situations could be observed again and again in order to analyse different aspects of play and social interaction.

The fact that a multi-method approach was used meant that the obtained quantitative findings can be accompanied by descriptive explanations of events which provide a more complete picture of the cultural scene observed.

4. Findings

4.1 Introduction

This research provides rich information regarding social interaction between children with visual impairments and their peers or adults during play in mainstream settings. In accepting the complexity and diversity of situations in which these children are placed, this study shows how children with visual impairments vary in their play and social interaction with others. It gives an insight into what happens in a real classroom, the obstacles faced by children and adults and the strategies used to overcome these. It also shows the variety of factors that contribute to the quality of these children's play experiences and opportunities. It certainly calls for a change in our expectations and attitudes as these are very often the barrier to providing and expanding play opportunities.

Another part of the study focused on observing children while performing a task in pairs as an exploration of social interaction during these more structured situations.

The findings presented below are divided into sections depending on the focus they have. Due to the diversity of cases and situations, certain identified trends are analysed on an individual basis with specific examples to illustrate that particular trend.

4.2 Data

4.2.1 Characteristics of the children

Information about the children who participated in the study was gathered through questionnaires to parents and teachers or assistants. Not all parents completed questionnaires about their children. In five cases parents refused to provide such information; in another five cases parents were happy for other people to provide that information; and in ten cases the parents provided that information themselves. It emerged that asking parents' opinions about personality characteristics of their child or about social interaction with other children was not a very easy task: they often found it difficult to marshall their thoughts and provide a response.

The teachers' perceptions of the social adaptation of the children is shown in Table 4.1. This information was gathered through the characterisation form (see Appendix 1) for each child and it represents what teachers or assistants commented about the social adaptation of the child. From the teachers' questionnaires information was also gathered about which peers the child interacted most with.

Social adaptation	N° of cases n=20
Excellent	2
Good	6
As other children	1
Poor	3
Very difficult but improving	1
Very poor	1
No comment	6

Table 4.1 - Teachers' perception of children's social adaptation.

The children whose teachers thought they had poor or very poor social adaptation mentioned that these children presented:

- difficult behaviour,
- poor social skills,
- difficulty in mixing with others,
- difficulty in making friends,
- a need to be aware of the consequences of their own actions,
- a need to learn strategies to cope with conflict,
- low self-esteem.

Teachers were questioned about peers who interact mostly with the children with visual impairments (see teachers' questionnaire in Appendix 1). In 11 cases teachers were able to name some of the peers who would interact with the child with visual impairment, while in 9 cases teachers were not able to name anyone specifically. Six out of these 9 cases mentioned some characteristics of the children who would interact with the child with visual impairment, for example "Boys most of the time", "Prefers to play with younger children, mainly other girls.".

While in the other 3 cases, 2 teachers mentioned that there was no one specifically, for example "He doesn't have any particular friends although other children are always willing to work/play alongside him." These 2 cases included children considered to have poor social interaction with others. The other case the teacher mentioned "It varies" in a case of a child considered to have excellent social adaptation and being liked by peers but who did not have a special friend.

Figure 4.1 shows how parents and teachers perceived the children in terms of their interactive skills. Parents and teachers generally considered that children

found it easier to express their feelings and to ask for help than to negotiate with others, invite a friend to play or share with others. Five parents or teachers gave examples to illustrate their children's difficulty in negotiating with others and in solving conflict and expressions such as "likes own way" were used very often. A parent wrote "Puts only his way of thinking and feels strong." A parent of the youngest child in the sample also mentioned that he was more interested in interacting with adults and would not invite a peer to play, and he would not attempt to solve conflict apart from shouting, screaming or fighting.

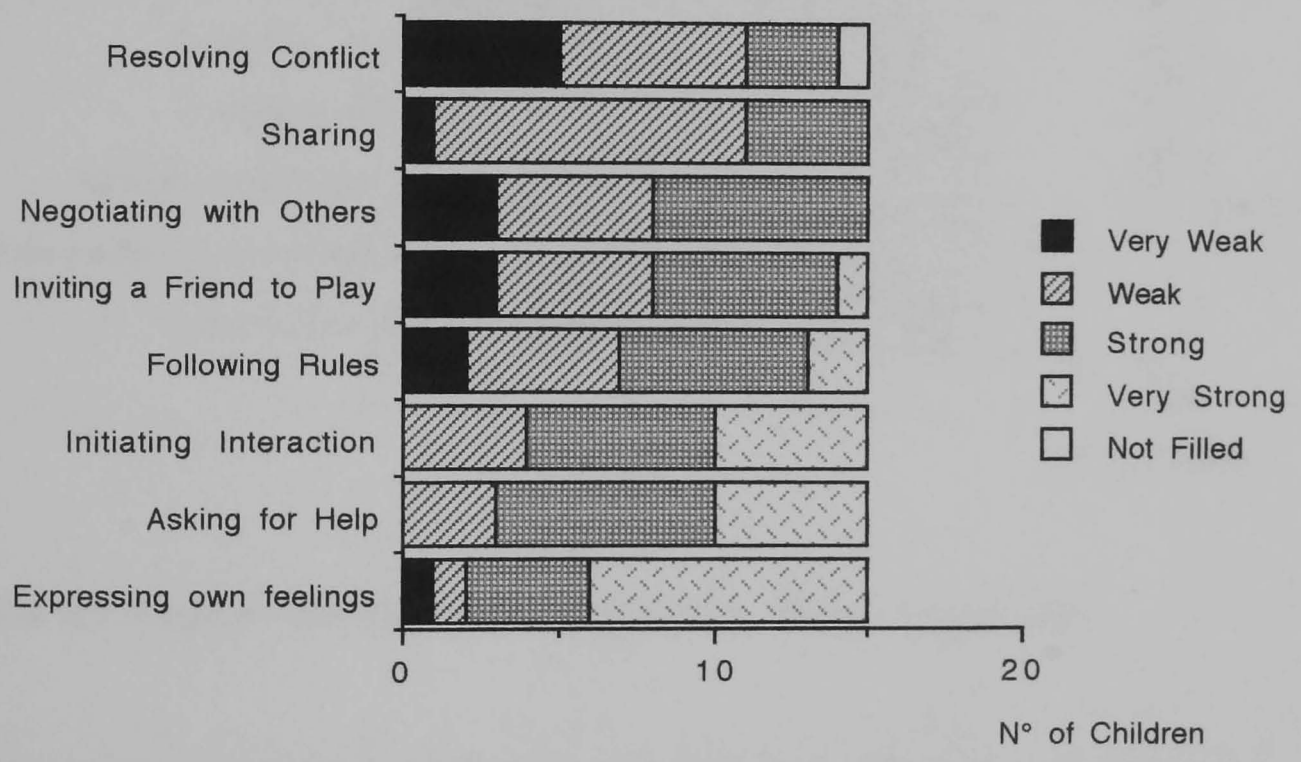

Figure 4.1 Parents' and teachers' perceptions of children's social interactive skills.

Figure 4.2 shows how parents and teachers perceived the children in terms of their personality. Parents and teachers were asked to circle (in a scale from 1 to 4) where they felt it would describe better the child regarding a number of aspects, as shown below:

Generous	1	2	3	4	Selfish
Cooperative	1	2	3	4	Uncooperative, etc, etc.

It can be seen in figure 4.2 that 11 children were considered talkative, 2 fairly talkative and only 2 towards being quiet. Most of the children were therefore, considered outgoing, adventurous, enthusiastic and talkative. Some parents and teachers also indicated that the children were more inclined towards being selfish, unhelpful and uncooperative.

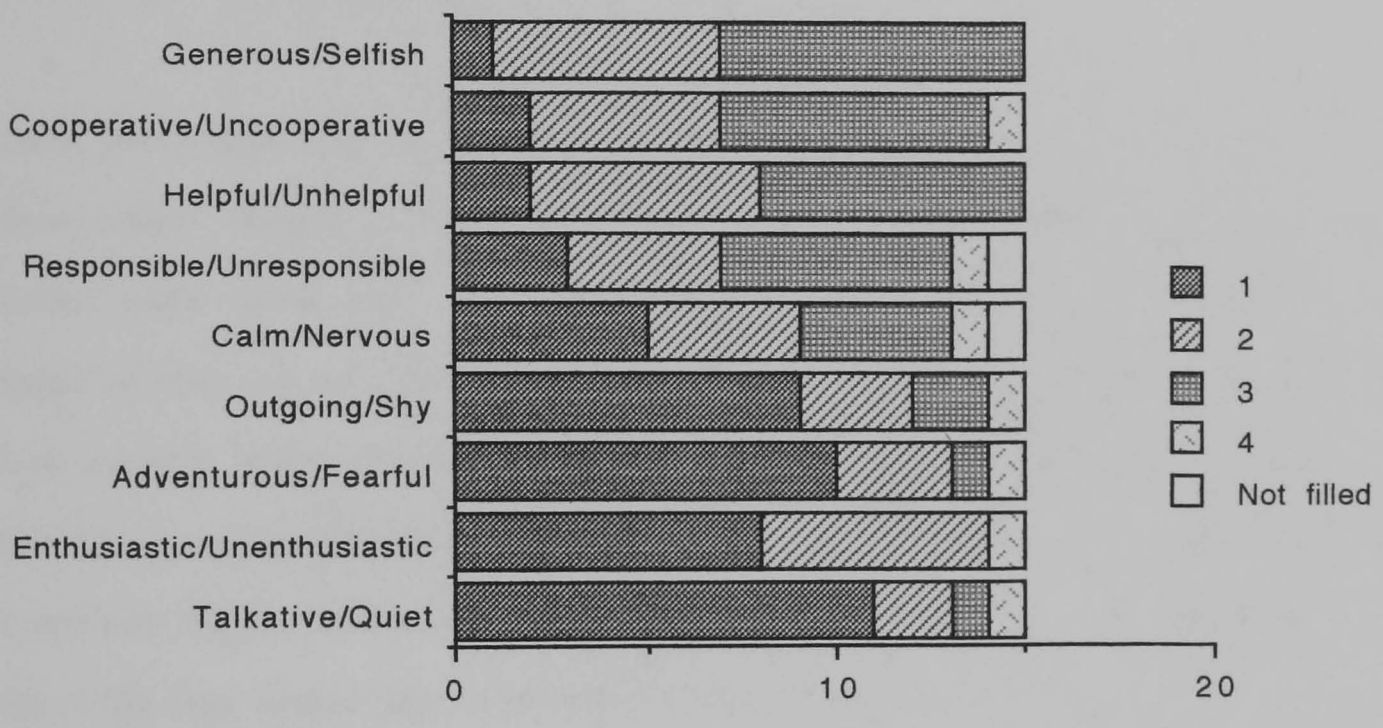

Figure 4.2 Parents' and teachers' perceptions of children's personality.

Although this introductory descriptive information derives from questionnaire responses concerning the majority but not all the children in the sample and is fairly informal, it highlights aspects of social interactive skills and personality that are of concern to parents and teachers of these children.

4.2.2 Individual differences and the diversity of play

A diversity of play behaviours and social interaction was observed within the overall group of children. Data regarding the amount of time spent in different levels of interaction and forms of play for each child and in each session are

presented in Appendix 4. Table 4.2 shows the overall percentage of time that each child spent in each category for level of interaction and percentage of time spent playing. Children presented different kinds of play and in a variety of play areas such as in the home corner, on a carpet with constructive toys, shapes and dominoes, cars, plasticine, water and sand, sticking and cutting, with musical toys, with cards, looking at books, etc.

Social interactions and play of children with visual impairments, as for any other children, depend on the children themselves and on the social and physical context within which such interactions take place. For example, some children played on their own for a great amount of time (such as Martin who spent almost three quarters of the observed time isolated), while others would never be on their own (such as Elisabeth, Kevin, Tom and Charles). However, it is important to ask why did the children play on their own? Were they practising a particular skill or did they seek a quiet area away from the others?

For example, Alice and Sam spent almost 50% of the observed time isolated due to the fact that they were practising a skill on their own, i.e. folding and cutting a piece of paper in one case and building an aeroplane in the other. On the other hand, Charles was never on his own but his activity was highly controlled by the adult.

Some of the children also spent most of the time playing, such as Kevin (100%), Anthony (98.88%), Richard (97.77%), etc.; while others spent a great part of the observed time not playing, such as Martin (58.33%), John (52.77%), Elena (47.22%) and Sean (46.11%).

Child	Iso.	Par.	Coop.	Adult	P/Ad	C/Ad	Other Int.	Funct/ Man.	Stereo-typical	Constructive	Pretend	Games with Rules	Other Play	Play Total	No Play
Elisabeth		23.88	75.55	0.55				35.33			37.22			72.77	27.22
Martin	74.44	2.77	2.77	4.44			15.55	14.44	26.66					41.66	58.33
John	36.66	21.66	2.22	17.77	21.66			37.22	10					47.22	52.77
Mark	26.66	51.11	20.55	1.66				1.66		72.22	18.88			92.77	7.22
Elena	10.00	1.11	0.55	38.33	4.88		1.11	30.55		13.33			8.88	52.77	47.22
George	11.66	35.00	47.22	1.11	3.88		1.11	49.44	2.77		17.77	11.11	7.22	88.33	11.66
Daniel	15.00	11.66	20.55	48.88	1.66	2.33		11.11	2.22		64.44		7.77	85.55	14.44
Anthony	21.66	44.44	32.22		1.11		0.55	8.33		50	40.55			98.88	1.11
Richard	4.44	58.33	36.11		0.55	0.55				48.88	48.88			97.77	2.22
Kate	5.55	77.22	16.66				0.55	6.66		55.55	28.33		2.77	93.33	6.66
Kevin		34.44	65.55							100				100.00	
Louis	5.00	46.11	38.33				10.55				1.66		76.11	77.77	22.22
Sam	45.55	1.66	41.66	7.22	3.88			3.88			1.11	41.11	33.33	79.44	20.55
Charles					97.77	2.22						83.33		83.33	16.66
Tom		46.66	45.00		8.33			57.22			1.66	21.66	5.55	86.11	13.88
Nelly	11.66	38.33	33.33	15.55	0.55		0.55	30	12.22	20	6.11		2.77	71.11	28.88
Christine	23.33	37.22	33.88	5.55				23.33			68.33			91.66	8.33
Alice	48.88	7.77	42.22	0.55			0.55	7.22		41.66	43.33			92.22	7.77
Trevor	31.11		4.44	21.11	36.66	0.55	6.11	11.66	0.55		8.33		53.33	73.33	26.66
Sean	17.22	52.22	30.55					25			28.88			53.88	46.11

Iso. = Isolated
Par. = Parallel
Coop. = Cooperative
P/Ad = Parallel with Adult
C/Ad = Cooperative with Adult
Other Int. = Other Interaction
Funct./Man = Functional/Manipulative

Table 4.2 - Percentage of time spent in different levels of interaction and in play by each child.

Although there were many individual differences it was possible to identify some trends. The two boys who were totally blind and had learning difficulties (Martin and John) and a girl who had a language impairment (Elena) spent around 50% of their time not playing. These children were still exploring their environment, moving from one area to another, taking things in and out of boxes they had found, exploring drawers in the classroom, etc. These three children also tended to spend a lot of time on their own or with an adult and to present very little interaction with the other children (a maximum of 2.77% of the observed time). Stereotypical play, characterised by mouthing, waving or banging of toys was observed mainly on children who have additional difficulties.

It was found that different schools and professionals presented different attitudes and expectations from the children in terms of their play. For example, in one school a totally blind child was not expected to play with constructive toys because of his blindness (see Appendix 5) while in another school, a totally blind child's favourite activity was playing with constructive toys and it was never thought that his blindness would be a limiting factor.

To illustrate this diversity some cases are presented next from the observational data. The youngest child in the sample, Trevor, played in the home corner in one of the sessions. He had started nursery recently and showed some difficulty in recognising his peers. Trevor got inside the cupboard and opened and closed the doors, but he mainly interacted with the adult. On the other hand, Anthony who is totally blind (as is Trevor but eight months older and with more experience at nursery), interacted much more with his peers while playing in the home corner. He pretended to prepare a picnic and although he was not always with his peers, his play showed a sequence in which children would do something on their own for a moment and then do something together for a while. They discussed

what they were preparing to take to the picnic, prepared it on their own and met again to go out for the picnic.

Kevin and Nelly both played with construction toys with their peers. While Kevin decided what he was going to build and then carried out his objectives to the end, Nelly kept on putting pieces on top of each other, breaking it apart and doing it again. Several times she changed her mind about what she was actually building. Kevin interacted with his peers to get help finding the pieces he needed, discussing how they were going to build the model and trying to copy what his peers built. On the other hand, Nelly interacted with her peers occasionally to share with them what she was building but most of the time to make plans about their future, such as visiting each other, going to the swimming pool, etc.

It is important to take into consideration that the boys with additional difficulties were totally blind. The girls with additional difficulties had some residual vision. Also the difficulties presented by the boys were learning difficulties while the girls presented language difficulties and cerebral palsy.

For instance, one of these children (Martin) only occasionally was approached by another child who would call him and try to show him an object, but without success. While playing at the water tray, he rocked and waved objects and occasionally he filled a bottle with water.

Martin was left by the adult to play with his peers. However, the adult approached and interacted with Martin with the objective of stopping him doing something or to ask him to tidy up. Any interaction that occurred during Martin's play would be with the adult trying to stop his activity. For example, Martin tried many times to empty a bucket with wooden blocks but the adult always stopped him from doing so because it would make a mess.

The other child with additional difficulties (John), was trying to fit shapes in the respective holes and one of his peers tried to help him to perform the task. However, his peer did not realise that he could not help John just by pointing to the right hole. The adult who was monitoring from a distance, asked the peer to take John's hand to the hole he wanted to show to John. This peer managed to help John for a while. However, John did not show much interest in the toys, he was constantly moving away, exploring cupboards and drawers. The adult tried to understand what John wanted to play with and asked him several times but John would just repeat what the adult said. When he accepted something he would play with it for a few seconds and then just left it.

An interesting aspect that emerged from this Table was the fact that when an adult was present there was very little interaction between the children themselves. If we consider the categories of 'Adult', 'Parallel with Adult' and 'Cooperative with Adult', it can be seen that the latest of these categories represents a minority of the time observed.

As can be seen from table 4.2 the time children spent in the presence of an adult was generally spent in interaction with the adult or in proximity to other children in the presence of the adult. It was very rare to observe interaction with other children when an adult was present. This fact is in agreement with the hypothesis that adults vary in their ability to scaffold children with visual impairments and many times they adopt less facilitative moves to interact and promote social interaction, a finding discussed in more detail in subsequent sections.

For example, Charles played a shape game in the presence of three peers and an adult who controlled all the session and showed difficulty in promoting interaction between the children as can be seen in the extract below.

Charles	Peers	Adult
		Right. Can you put that inside the bag. I shake it for you and then L is going to ask you to find something. Right L.
	Pentagon.	
(A gives bag to C.) Oh pentagon, pentagon. Got, got, I've got one, I've got one, I've got one, I've g::ot. (C takes pentagon out of the bag. P1 claps.)		
		How many angles does the pentagon got?
Five.		
		Good boy. Right, put it in the bag.
No, I shake it.		
		Alright, you shake it and pass it to D and ask him to find a shape.
Yeah. Please... wait...		
		Take your hand back out now.
Wait.		
		No, take your hand back out now. Pass it to D.
	Come on C.	
(C gives bag to P1.) Find me a circle.		
	I've got it.	
		Well done D. Did D find the right shape?
(A gives shape to C.) Yes, it's round.		

(A = Adult; C = Charles; P1 = Peer 1, etc.)
Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

By controlling all the steps of the game, the adult did not stimulate Charles to take any initiative and ask his peers to feel the shape they took out of the bag in order to check if they were right. Before the observation started, this adult mentioned that Charles had difficulty in interacting with the other children and therefore, he never plays with other children on his own.

Another diversity was observed regarding the gender of peers who played with children with visual impairments. Previous research (MacCuspie, 1992) suggests that boys with severe visual impairments seem to interact more with girls than with boys. In the present study it was observed that girls with visual impairments tended to play within a group of both boys and girls or to play with other girls (Table 4.3). On the other hand, boys with visual impairments were observed playing within a group of boys and girls, playing with other boys or playing mainly with girls. In some occasions, boys with visual impairment played in a group of girls and boys but they interacted mainly with girls. For example, Daniel played in the home corner with four girls and one boy but he tended to interact with the girls. It was observed that some boys interacted mainly with girls independently of the level of their visual impairment but also that some boys with severe visual impairment interacted with boys or within a group of boys and girls. For example, Tom is totally blind and during his second session he played with boys, Kevin who is also totally blind played both with boys and girls. This depended on the social context, for example when Tom played with boys there were only boys in the carpet area. Besides, it was observed that in the cases of Daniel, Anthony and Trevor, girls approached them and initiated interaction while boys only rarely did that.

Child	TB/PS	Session n° 1	Session n° 2
Elisabeth	PS	F	F
Martin	TB	B	-
John	TB	M	M
Mark	PS	M	M
Elena	PS	-	-
George	PS	M	M
Daniel	TB	F	-
Anthony	TB	F	F
Richard	PS	F	F
Kate	PS	F	F
Kevin	TB	B	B
Louis	PS	F	F
Tom	TB	B	M
Charles	TB	B	B
Sam	PS	-	M
Nelly	PS	B	B
Christine	PS	B	F
Alice	PS	-	B
Trevor	TB	B	-
Sean	PS	M	B

F = Female M = Male B = Both PS = Partially Sighted
TB = Totally Blind

Table 4.3 - Gender of peers who interacted with children with visual impairments.

This is an example of how different contextual factors play a major role in promoting social interaction which supports another hypothesis of this study. Therefore, the diversity of play presented does not depend exclusively on within child factors but on a combination of factors.

4.2.3 Visual Impairment, maturity and interaction

In this section the influence of the children's characteristics on the quality of social interaction is considered. How did their maturity and presence of residual vision influence the success of their social encounters? What behaviours did these children evoke from their peers or adults?

Significant relationships were found between children's age and the level of interaction for the situation when an adult was present. It was found that the younger the children were the more time they spent with an adult on a one to one basis as can be seen in Table 4.4 (Rho=-0.457, $p<0.05$) which just reaches conventional levels of significance. Although the majority of the group did not present additional learning difficulties, some did. One would expect this to confound the sample relationship between chronological age and levels of interaction. The relationship between interaction and maturity (as measured by chronological age) still holds.

N	20
$\sum D^2$	1937.5
Rho	-.457
Z	-1.991

Table 4.4 - Relationship between age and time spent with an adult on a one to one basis.

Also the more severe the visual impairment, the more time an adult was with the observed child, either on his own or with a group of children as can be seen in Table 4.5 (Rho=-0.490, $p<0.01$). This was due to the fact that the adult either directed the child in the activity, tried to keep the child interested in one activity, stayed next to the child and went along with the child's play or was asked for help by the child. Thus, children with more severe visual impairment may be subject to more adult management and direction and therefore allowed less initiative and were more dependent on the adult to mediate their environment.

N	20
ΣD^2	1981.5
Rho	-.49
Z	-2.135

Table 4.5 - Relationship between severity of visual impairment and time spent with an adult with or without peers.

On the other hand, the less severe the visual impairment, the less children's activity was controlled by adults (Rho=-0.580, $p<0.01$ - Table 4.6). This was due to the fact that adults tended not to be present when children with less severe visual impairment were playing with peers. With the exception of when the child asked for help from the adult, the presence of adults was usually the result of the adult's perception of what the child could do on their own. Some adults stayed next to children with visual impairments all the time to direct them and occasionally their peers as well. Other adults stayed around and occasionally intervened when they thought that was necessary.

N	20
ΣD^2	2101
Rho	-.580
Z	-2.527

Table 4.6 Relationship between severity of visual impairment and following control of adults.

Children with less severe visual impairments controlled more their peers' activities, i.e. they were able to influence their peers behaviours maybe by proposing a topic of play, stopping the peer doing something, suggesting going somewhere else, etc. This is shown in Table 4.7 (Rho=0.409, $p<0.05$).

N	20
$\sum D^2$	785.5
Rho	.409
Z	1.785

Table 4.7 - Relationships between severity of visual impairment and control of peers' activity.

Therefore, it is possible to identify some patterns of interaction depending on the children's age and severity of visual impairment. Overall, younger children seem to interact more with adults than older ones. This is also true for the children with more severe visual impairments, with the difference that these children tend to be with peers and adults. There was not a significant relationship between severity of visual impairment and interaction with the adult on a one-to-one basis. It also emerged that children who have some residual vision are much more likely to be able to control their peers' activities.

These findings support the hypothesis that the age and degree of visual impairment are factors that influence the presence of an adult and the ability to control others' activities.

4.2.4 Child as a resource

One aspect that emerged as being of interest to analyse was the child's use of others as a resource and vice versa. For example, using others in order to obtain information regarding the localisation of objects, how to perform a task, what is happening, etc. A significant relationship was found between age and being used as a resource by peers. Overall, the older the children the more they were used as a

resource by their peers to provide information, objects, etc. (Rho=0.560, p<0.01 - Table 4.8).

N	20
$\sum D^2$	585
Rho	.56
Z	2.442

Table 4.8 - Relationship between age and being a resource to others.

The same was true between the level of visual impairment and being used as a resource. The less severe the visual impairment the more children were used as a resource (Rho=0.542, p<0.01 - Table 4.9).

N	20
$\sum D^2$	609
Rho	.542
Z	2.363

Table 4.9 - Relationship between severity of visual impairment and being a resource to others.

These relationships support the hypothesis that age and degree of visual impairment are factors that influence being used as a resource by others. There were however, no significant relationships between age or degree of visual impairment and using others as a resource. Children with visual impairments used others as resources independently of their age or level of visual impairment.

Using a recursive data processing strategy (Goetz and LeCompte, 1984) it was possible to look in more detail at the categories of being a resource and using others as a resource. Some trends became clearer when these categories were

split into sub-categories. Table 4.10 shows the distribution of different categories of requests made to peers and adults. Almost a third of requests made by children with visual impairments to peers and half of the requests made to adults concerned general information (What's this?, What is it for?, etc.).

Use of others as a resource	% of overall requests	
	Peers n = 247	Adults n = 59
Requests concerning identity	5	0
Requests information concerning the localisation of people or objects	14	7
Requests other to take an action	11	10
Requests object	22	14
Requests information concerning the performance of a task	3	2
Requests information concerning other's actions, wishes or feelings	6	3
Requests confirmation (possession of objects, etc.)	5	5
Requests other information related to him/herself (asking authorisation)	1	10
Requests other information	33	49

n = number of observed events

Table 4.10 - Children with visual impairments using others as a resource, percentage of overall requests to peers and adults.

Almost 10% of requests made to peers and adults called for an action to be taken, whilst 22% of requests to peers and 14% to adults were made with the aim of obtaining objects. A smaller percentage of requests made concerned the identity of partners, actions, wishes or feelings of others, etc. (Table 4.10).

On the other hand, about 50% of requests from adults and peers concerned the child with visual impairments own actions, wishes and feelings (Table 4.11).

Adults also showed frequent requests (39%) for information about the children's play activities while peers only rarely (3%) asked for such information. Peers also requested other information about the child with visual impairment such as "Are you blind?"; to provide information concerning the whereabouts of objects or people. Children with visual impairments were requested by their peers to give objects but this happened more often when the child with visual impairment was holding an object rather than having to fetch one. On the other hand, adults did not request information about localisation of people or objects, or how to perform a task, or to get an object.

Act as a resource to others	% of overall requests	
	Peers n = 92	Adults n = 87
Child was requested to give an object that in their possession	7	0
Child was requested to get an object for others	4	0
Child was requested to give information concerning the performance of a task	2	0
Child was requested to give information about localisation of people or objects	7	0
Child was requested to do something for others	4	1
Child was requested to give information concerning the child's own play activity	3	39
Child was requested to give information concerning own actions, wishes or feelings	47	52
Child was requested other information about him or herself ("Are you blind?" "Can you see?")	9	3
Child was requested other information	17	5

n = number of observed events

Table 4.11 - Children with visual impairments being a resource to others, percentage of overall requests from peers and adults.

Therefore, it was observed that while children with visual impairments were using others as a resource so that they could either obtain objects or have something done for them, their peers and adults were using the children with visual impairments as a resource to get information concerning their own actions and wishes (Table 4.11).

These findings relate to Andersen's et al. (1993) observations of interactions between mothers and their blind children where the mothers made many requests and introduced topics related to the child's own activity. However in a different context, it was observed how children with visual impairments were being requested information related mainly to their own activity.

4.2.5 Attention-seeking

Overall, children were successful in 69% and unsuccessful in 31% of their attempts to initiate interaction with peers; whilst they were successful in 97% and unsuccessful in only 3% of their attempts to initiate interaction with adults (Table 4.12). Therefore, this finding shows that adults are more likely to respond to the attention-seeking behaviours of children with visual impairments.

Attention-seeking behaviours	Peers % n = 55	Adults % n = 39
Successful	6 9	9 7
Unsuccessful	3 1	3

Table 4.12 - Distribution of successful and unsuccessful attention-seeking behaviours towards peers and adults.

Table 4.13 shows a distribution of attention seeking behaviour strategies used by children with visual impairments to initiate interaction with their peers. Often children used a combination of strategies such as calling and showing an object or calling and touching their peer on the shoulder, etc. Therefore, the percentages add to more than 100%. As can be seen in Table 4.13, children with residual vision showed more attempts and were slightly more successful in getting attention from their peers.

Groups			Strategies %				
		%	Call	Touch	Show	Approach	Int. Top.
Totally Blind n=16	Success	62.5	60	20	40	20	
	Unsuccess	37.5	67	17		17	33
Part. Sighted n=39	Success	72	71		39	14	4
	Unsuccess	28	100		9	18	

Int. Top. = Introduce Topics/ Ask questions

Table 4.13 - Distribution of strategies used by children with visual impairments to get attention and initiate interaction with their peers.

What also emerged from this analysis is the importance of showing objects or an action to initiate interaction. 40% of totally blind children's successful attempts to get attention from their peers involved showing an object or action. A similar percentage of successful attempts from children who have residual vision was also observed. A much smaller percentage of this strategy was observed when children with visual impairments were unsuccessful. Showing an object/action is a strategy used by children from a very young age to get attention and initiate interaction (Bates, Camaioni, Volterra, 1975).

Table 4.14 shows the same distribution when children with visual impairments initiated interaction with adults. As can be seen, totally blind children tended to introduce a topic or to call an adult while partially sighted children tended to approach the adult and show something.

Groups		%	Strategies %				
			Call	Touch	Show	Approach	Int. Top.
Totally Blind n=27	Success	96	23				77
	Unsuccess	4					100
Part. Sighted n=12	Success	100	50		50	75	
	Unsuccess	0					

Int. Top. = Introduce Topics/ Ask questions

Table 4.14 - Distribution of strategies used by children with visual impairments to get attention and initiate interaction with adults.

In terms of responding to their peers' attempts to get attention and initiate interaction it was observed that some children failed to respond to these behaviours due to the fact that they carried on with their own activity. Table 4.15 shows the distribution of strategies used by peers to get the attention of children with visual impairments. As can be seen in Table 4.15, sighted children tended to call the totally blind child while they presented other strategies such as showing something or touching a partially sighted child. To show something (object or action) in order to get the attention of children with visual impairments did not have such an impact in the rate of success of their attempts as it did when children with visual impairments attempted to get the attention of their sighted peers. This would be expected as these children have limited access to visual information.

Groups		Freq.	Strategies			
			Call	Touch	Show	Approach
Totally Blind n=5	Success	3	3			
	Unsuccess	2	1		1	
Part. Sighted n=36	Success	11	11	1	3	
	Unsuccess	25	24	4	6	

Table 4.15 - Distribution of strategies used by peers to get attention and initiate interaction with children with visual impairments.

4.2.6 Play contexts, resources and roles

In order to identify factors that promoted play and social interaction, the physical and social context was examined, together with strategies used and comments were analysed for each session (Appendix 6). Also, sessions were ranked according to the level of interaction presented and amount of time spent playing. Table 4.16 shows play sessions ranked according to the amount of time children spent interacting with their peers. It was found that when children played with a group of peers which was kept the same during the whole session, the proportion of time spent in interaction was higher. Therefore this emerges as a good strategy to promote social interaction. This finding is similar to what Kekelis and Sacks (1992) observed in their study on children with visual impairments in mainstream settings.

Furthermore, Table 4.16 shows that some activities can produce low or high levels of interaction. For example, playing with constructive toys to build a model can promote high or low levels of interaction. What made the difference in this kind of activity was the fact that when children were building the same model, they would present a high level of interaction while if they were building their own model the level of interaction decreased.

Besides, the same children presented both high and low levels of interaction. For example, Alice spent 82% of the second session interacting with peers and only 2% of the first session doing so. This was due to the fact that during the first session Alice was the only child who chose to play with building materials, while in the second session she went to the home corner with three other children who remained in that area.

Sessions and Children	Context	% of time spent interacting with peers
Kevin 1	building a model with peers	97
Elisabeth 2 Alice 2	sand tray - with a peer home corner - same group of peers	82
Sam 2	card game with a peer	80
Richard 2	home corner - same group of peers	70
Elisabeth 1	home corner - same group of peers	69
Christine 1	home corner - same group of peers	63
Tom 1 George 2	game with shapes - same group of peers carpet with numbers mats and computer	57
Anthony 2	home corner	44
Louis 2	art and craft	43
Daniel 1	home corner	41
George 1	water and carpet with cars	38
Nelly 1 Sean 1	home corner carpet with cars	37
Kevin 2	building his model - same group of peers	34
Tom 2 Louis 1	carpet with dominoes and puzzles looking at books - same group of peers	33
Nelly 2	building own model	30
Mark 2 Kate 1	building own model building and playing with dinosaurs	28
Sean 2	home corner - same group of peers	24
Anthony 1	building own model	20
Mark 1	building own model	13
Trevor 1	home corner	9
Kate 2	building own model	6
Martin 2 John 2 Christine 2	carpet - mixture of toys carpet - mixture of toys ponies	4
Sam 1	art and craft on his own	3
Richard 1 Alice 1	building own model building own model	2
Martin 1 Elena 2	water various	1
John 1 Elena 2 Charles 1 & 2 Daniel 2 Trevor 2	carpet various game with rules directed by adult sand art and craft	0

Table 4.16 - Ranking of play sessions according to percentage of time children with visual impairments spent interacting with their peers.

As can be seen in Appendix 6, children with visual impairments played in a variety of play areas and with a variety of play materials. These children played within physical contexts that are common to nursery and primary schools. For

example, children played in home corner areas which had a variety of mainly colourful plastic pretend objects. Some of them had real wooden spoons and telephones. In one case there were some small metal saucepans as well. Some children played with sand with a variety of plastic spades, buckets, cars, etc. On one occasion the sand pit was so full of play materials that the child had to move them away and when he lost one toy it was difficult to find it again. Other children played with plastic colourful shapes, plastic building materials, wooden puzzles, models of cars and road mats, sticking, cutting materials or looking at books.

It is important for children with visual impairments to have access to real objects or objects that have non-visual characteristics similar to the real object, as it is easier for them to identify and use them. In the development of symbolic play of sighted children, there is a progression from substituting an object for another that looks similar often in terms of its shape, to substituting an object for another that can be very different (Nicolich, 1977). Most pretend play objects are very attractive to look at but they are not that interesting to feel, which may limit the development of symbolic play in children with visual impairment.

Although the use of play materials appropriate for children with visual impairments is an important factor in promoting play and social interaction, there were few attempts to increase accessibility to them by adapting or modifying them. In some cases, this created an obstacle to social interaction. For example, Tom who is totally blind played in the carpet area with a variety of puzzles, dominoes, etc. These materials were not adapted for Tom as he could not see the drawings and colours that would allow him to match pieces together. As a result, he built stables, horses, fields, etc. using the pieces while his peers were making the puzzles etc. The fact that Tom did not have access to these toys in the

same way as his peers prevented any further interaction between the children as they could not play the same game.

The type of materials used in a play session had an effect on the amount of time children spent playing or interacting with each other as can be seen on Table 4.17 and 4.18. Table 4.17 shows that there was a lot of interaction between the children when the group of children was maintained during the session but also when they played in the home corner, built a model together, etc.

Therefore, the context in which the children played had an effect on the amount of time children spent playing and interacting with each other. When children played with plastic building materials they spent most of their time playing but were playing more in parallel with other children than interacting with their peers. However, there were exceptions when the children built a model together. On the other hand, when children played in the home corner they tended to interact more with each other and this was particularly observed when the group of children in the home corner remained the same.

The physical layout of objects is also an important factor in children's play. Children with visual impairments need to explore their environment so that they know where to find toys. Large areas with toys spread out loosely on the floor led children to spend time exploring their environment and having difficulty in finding toys. This was observed in four different sessions: Martin (second session); John (second session); George (second session) and Tom (second session). In the case of George's session, he was able to follow his peers and to look for the number mats around the carpet area. George has residual vision and therefore he could use it to keep track of what was happening around him. On the other hand, Martin, John and Tom are totally blind and they ended up playing

with whatever they found without having the opportunity to choose what interested them.

Sessions and Children	Context	% of time spent playing
Anthony 1 Kate 2 Kevin 1 Kevin 2 Alice 1	building own model building own model building with peers building own model building own model	100
Mark 1 Anthony 2 Richard 1 Richard 2	building own model home corner building own model home corner - same group of peers	98
Elisabeth 1	home corner - same group of peers	97
Louis 2	art and craft	94
Charles 2 Christine 2	game with rules directed by adult ponies	93
Tom 1	game with shapes - same group of peers	91
Christine 1	home corner - same group of peers	90
George 1	water, road mats and cars	89
Mark 2 George 2 Daniel 1	building own model carpets with numbers mats and computer home corner	88
Kate 1	building own model and dinosaurs	87
Alice 2	home corner - same group of peers	84
Daniel 2	sand	83
Sam 2 Sean 1	card game with peer carpet with cars	82
Tom 2	carpet with dominoes and puzzles	81
Trevor 1	home corner	80
Nelly 2	building own model	79
Sam 1	art and craft	77
Charles 1	game with rules directed by adult	71
Trevor 2	art and craft	67
Nelly 1	home corner	63
John 1	carpet	62
Louis 1	looking at books	61
Elena 2	various	56
Martin 1	water	54
Elena 1	various	50
Elisabeth 2	sand	49
John 2	carpet	32
Martin 2	carpet	29
Sean 2	home corner - same group of peers	26

Table 4.17 - Ranking of play sessions according to percentage of time children with visual impairments spent in play.

Another aspect that influenced children's opportunities to interact with their peers was the presence of an adult. As mentioned above in section 4.2.3, there was a significant relationship between age or degree of visual impairment and the presence of an adult. Besides, adults did not necessarily promote social interaction between the children (Table 4.2).

For example, Charles played shape games with peers and an adult who controlled all the steps of the game. The adult showed the shapes to Charles so that he knew what the other children were talking about, directed each child's activity and controlled turn-taking of the children who were expected to follow directions and answer questions. The adult also controlled Charles' head position and took away any object that Charles might explore during waiting periods. In this situation children were more preoccupied with answering correctly than playing with each other. Charles was considered by staff to lack social skills to interact with his peers but he was not given any opportunity to practise such important skills.

These findings support the hypotheses that children with visual impairments experience a variety of obstacles which are not determined exclusively by within child factors and that contextual factors play a major role in promoting social interaction.

4.2.7 Language

It is through language that children with visual impairments can have access to a great part of the information they cannot access visually. They therefore rely on their social partners to receive descriptions and clarification about objects, people and events. However, it is not always straightforward to understand what information is relevant and necessary, especially if the social partner is a young

child. With age children became more able to understand other people's points of view and to express themselves, which is a necessary condition to provide relevant verbal information to children with visual impairments. However, the social partners of children with visual impairments varied in their ability to provide this information and in acting as a mediator of shared experience. To give some examples of how children found it difficult to understand the other's point of view and how they managed to overcome that obstacle, an interaction between a five-year-old blind boy and five-year-old sighted girl and an interaction between a blind boy, a sighted boy and a girl all of whom are four years old, are considered.

Daniel	Peer
	Mix the sugar.
Let me see, where is the sugar?	
	Here.
(Peer holds pot in front of Daniel's face, Daniel extends his arms looking for the pot but he feels the saucepan instead.)	
In where?	
	In here.
(Peer holds pot in front of Daniel again but this time the pot touches his face. Daniel quickly puts his hand in the sugar pot.)	
In there?	
	Yeah.
(D takes hand out of pot and passes with it on his mouth.)	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

In this case, the sighted girl has difficulty in showing an object to Daniel and her adopted strategy of holding the object in front of Daniel fails. She keeps showing the object closer and closer to his face. Only when physical contact between the pot and Daniel's face is established, he can understand what the girl meant. At the some time, Daniel keeps seeking verbal clarification about the localisation of the sugar.

Daniel	Peers
	We are going out today.
(Peers move around picking up things and stand behind the pushchair facing Daniel who is sitting on the floor.)	
	Would you like to come with us?....Do you? Do you want to go in the middle?
	Do you want to come with us? See you.
	Do you want to make a visit with us?
(Peer bends her trunk in Daniel's direction.)	
	Do you, Daniel? Do you want to push the pushchair with us?
(Daniel stands up and stretches the right hand in peers' direction.)	
Yeah.	
	Here.
(Peer pats with her hand on the pushchair.)	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

In this second example, the sighted children adopt different strategies by inviting their friend to join them and by bending down towards the blind child. As they do not receive an answer, they begin to provide more verbal information about what they mean, i.e. "to make a visit" and to push the pushchair to which then Daniel answered. The sighted children also used an auditory clue to inform Daniel about the localisation of the pushchair. Until then, Daniel did not know that his peers were behind a pushchair and that they intended to push it along and visit someone.

Playing with a group of children which remained constant throughout the play session and being involved in group activities in which the child with visual impairment played an active role were also situations which promoted language as children had to negotiate and agree in order to participate in a play scenario or to build something together, as in the example below.

Kevin	Peers
	What about a window?
No, it's not a ... It's a Victorian house.	
	A Victorian house has windows. A Victorian house has windows. A Victorian house has a door and windows isn't it?
	Yeah. But it's his house.
	I would, I would be sweating.
	Yeah. Well Simon they didn't have lights, did they? They had candles.
Yes, remember? Oh! We need that a... and a square.	
	I've found two flags.
	Oh thank you Simon. We can have two flags in our roof.
I don't like flags, it's my house.	
	Do you want to put one flag then?
No, no flags, they did... they didn't have flags on, on, on Victorian houses.	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

Again, adults played an important role in promoting language when they requested information concerning the child's activity and expanded their play topics and sequences. However, it is important that such requests for information occur either at the end of a play session or when the child approaches the adult to show something or to ask for help. When adults requested information about the child's play by intervening in the play itself, the child with visual impairment tended to interact with the adult instead of interacting with his or her peers.

4.2.8 Promoting social interaction and the role of adults

The role of adults in mediating the environment of children with visual impairments is extremely important to promote active exploration of their physical and social surroundings. However, adults varied in their ability to achieve this mediation. Unlike Workman (1986) who found that when adults were present they had a role in promoting social interaction between children, this study shows that sometimes adults had difficulty in promoting social interaction. This was due to the difficulty in understanding what were the child's interests, children's difficulty in understanding what they were supposed to do, or the suggested task was not appropriate for the child with visual impairment. This often resulted in inappropriate levels of scaffolding. Table 4.18 shows the distribution of play sessions according to the percentage of the session when an adult was present. The figures in front of the children's names refer to the number of the session.

Adult	Main Role	%	Sessions and comments
Not Present 16 sessions 40%		0	Elisabeth 1 Mark 1 George 1 Anthony 1 Richard 1 and 2 Kate 1 and 2 Kevin 1 and 2 Louis 1 and 2 Tom 2 Alice 2 Sean 1 and 2
Adult present for some of the time 17 sessions 42%	Adult intervenes when children needed help or wanted to show something	10	George 2 - children got out of a computer programme and could not get in again, teacher approached and put the programme on again.
		11	Sam 1 - child approached the teacher to show what he had done.
		11	Sam 2 - children requested help from an adult to use the close circuit television.
		17	Nelly 1 - child approached adult to show play objects.
		16	Nelly 2 - child approached adult to ask authorisation to move into another play area and for help when she broke a plastic knife.
		6	Christine 1 - child approached adult to ask for help dressing a doll.
		1	Alice 1 - child showed model to teacher.
	Adult asks questions about play activity	6	Daniel 1 - teacher comes in home corner and asks questions related to the play activity.
		6	Christine 2 - adult asks child if she plays with ponies at home as well.
	Adult tries to keep child interested	21	John 2 - adult tries to find out what interests the child.
		29	Trevor 1 - teacher suggests activity, tries to get children interacting with each other (not always successfully).
	Adult intervenes to direct or manage children's behaviour	1	Elisabeth 2 - adult intervenes to stop children throwing sand in the floor.
		2	Martin 1 - adult tells child to find objects in the water tray, stops child rocking.
		7	Martin 2 - adult stops child from tipping over buckets with bricks, tells him to tyde up.
		3	Mark 2 - teacher intervened to stop child moving out of the play area.
		2	Anthony 1 - adults intervenes to solve conflict between children.
		13	Tom 1 - adult intervenes to introduce game.
	Adult does not direct nor suggests	100	Daniel 2 - adult stays behind child and responds to attention-seeking behaviours of child.
Adult present most of the time 7 sessions 17.5%	Adult controls the overall activity	58	John 1 - teacher controls turn taking.
		84	Elena 1 and 2 - adult interacts with child, tries to keep her on task and suggests activities.
		90	
		100	Charles 1 and 2 - adult controls activity of group of children, explains the game rules, controls turn taking and checks children's understanding.
		100	
		88	Trevor 2 - adults controls child's activity, provides information about where to find objects and tells him what to do next.

Table 4.18 - Distribution of play sessions according to percentage of session when adult intervened and his or her role.

During sixteen of the sessions observed (40%) there was no intervention from adults. For about the same proportion of sessions (17 sessions, 42.5%) the adult intervened but only occasionally, ranging from 1% to 29% of the session. These occasional interventions had different aims. In some cases, adults intervened when children needed help or wanted to show something they made or were playing with. In a couple of cases, the adult joined in at the end of session to ask questions to the children about their play, for example: "Is there a party?", "Can I have a cup of tea?" or "Do you have any ponies at home, Christine?". In another couple of cases, the adult tried to keep the child interested in playing and this intervention took over 20% of the sessions. In these cases, the adult would ask the child what he wanted to play with, direct the child to where he could find the toy he wanted, suggest to children to ask questions of each other, etc. In six cases, the adult intervened to manage children's behaviour usually by stopping children doing something, for example, rocking, emptying buckets, throwing sand, etc. In only one case, the adult intervened to introduce a game.

During seven sessions (17.5%) the adult stayed with the child or group of children for most of the observed time. For the big majority of these cases, the adult controlled the activity. Adults varied in the way they did this. In some cases, the adult would control every single step of the play activity as the example shown later in this section (Charles) while others would try to keep the child interested in the task by making requests or asking display questions, i.e. asking for information the adult already had. In one case, the adult stayed behind the child for the entire session without directing the child but just by going along with the child's attention-seeking behaviours as shown later in this section.

Level of monitoring by adult	Sessions	
No monitoring 20 sessions	Elisabeth 1 Mark 1 George 1 Kevin 1 and 2 Tom 2 Sean 1 and 2 Christine 1	Anthony 1 Richard 1 and 2 Kate 1 and 2 Louis 1 and 2 Alice 1 and 2 Sam 1 and 2
Occasional monitoring 9 sessions	George 2 Daniel 1 Elisabeth 2 Anthony 1	Nelly 1 and 2 Christine 2 Mark 2 Tom 1
Monitoring of the session 5 sessions	Martin 1 and 2 Daniel 2	John 2 Trevor 1
Control of the overall session	John 1 trevor 2	Elena 1 and 2 Charles 1 and 2

Table 4.19 - Distribution of sessions according to level of monitoring from adult.

As can be seen in Table 4.19, adults only monitored the overall sessions in five cases, which represents 12.5% of the observed sessions. In some of these cases, the adult was busy but overseeing the play of the child, for example adults working with Martin for both sessions and John for the second session, kept on tidying up objects or preparing materials while monitoring the children's activity. Much of their intervention focused on trying to stop the child doing something or to identify the child's interests.

In other cases, the adult was just monitoring the play activity of the child but adults varied in what they tried to achieve with such monitoring. Trevor's first session was monitored by a teacher for the visually impaired who although was not always successful, tried to interest the child in others' activities, provided verbal information about how to find objects and occasionally was a play partner to the child. On the other hand, Daniel's second session was monitored by a general assistant who kept on responding to Daniel's attention-seeking behaviours and did not attempt to promote social interaction with peers, as shown later in this section.

In relation to the child's tendency to seek interaction with adults, it was observed that when the adult was not present there were a few children who approached the adult in order to ask for help or to show what they did. This happened in six out of seven sessions in which the adult intervened to help or to see something shown by the child (see Table 4.18). For example, Nelly was happy to interact with her peers but when they blamed her for breaking a knife, she approached the adult to ask for help and Christine approached an adult when she failed to get a peer to help her dressing a doll.

When the adult was present throughout the session, then children tended to interact with the adult. From the seven sessions characterised by a high percentage of time with an adult present there was a tendency for the child with visual impairments to interact with the adult and very limited opportunities to interact with peers. Table 4.20 shows the percentage of time spent in different levels of interaction when an adult was present throughout the session.

Sessions	Iso %	Par %	Coop %	Adult %	P/Ad %	C/Ad %	Other %
John 1	24	18	0	19	39	0	0
Elena 1	12	1	0	50	35	0	2
Elena 2	8	1	1	27	63	0	0
Daniel 2	0	0	0	97	3	0	0
Charles 1	0	0	0	0	97	3	0
Charles 2	0	0	0	0	99	1	0
Trevor 2	0	0	0	16	72	0	12

Table 4.20 - Percentage of time spent in different levels of interaction for the sessions when an adult was present throughout the session.

With the exception of Daniel, the children shown in Table 4.20 attempted to use adults as a resource more than other children did, and they almost never used peers as a resource (Only John used a peer as a resource on two occasions). Elena actually attempted to use the adult as a resource for 23 times and therefore requested a lot of information from the adult, but this was not so evident for Charles (6 times) and Trevor (8 times). On the other hand, Daniel did not use the adult as a resource but sought attention from her. During Daniel's first session, he played in the home corner with only occasional monitoring from a teacher for the visually impaired and in this situation he attempted to use peers as a resource for 30 times and for 41% of the session he interacted with his peers.

What is important to note is that in some cases the adult controlled the activity and therefore, it is difficult to know if they would tend to interact so much with the adult in a situation where they had more freedom. For example, Charles', Trevor's and Elena's sessions were highly controlled by the adult. On the other hand, Daniel's session was not controlled by the adult but he kept on seeking attention from the adult rather than from his peers. When the adult was controlling the activity, John tended to interact with the adult and when the adult was not present he had difficulty in interacting with his peers, for example, once he just lied down on the floor.

The children who were subject to more control from adults were usually younger and/or had a severe visual impairment. This was already shown by a significant relationship between age/severity of visual impairment and level of control by adults in the previous section 4.2.3. Trevor, Daniel, John, Charles are all totally blind, while all of them except Charles are some of the youngest children in the sample. Elena is a partially sighted child with language impairment. There were other children, for example Anthony and Tom, who are totally blind and are some

of the younger children in the sample, who were happy to play without the presence of an adult. However, Tom experienced lots of difficulties that were ignored by the adult (see example in section 4.2.9).

Therefore, this finding only partially supports the hypothesis that children will seek interaction with adults as they are more effective in mediating the child's physical and social environment. On one hand, adults were not always able to mediate the environment successfully and on the other hand, children who tended to interact more with the adult were also more controlled by the adult and therefore had less opportunities to interact with peers.

An example of how adults varied in their level of scaffolding can be exemplified when two of the oldest children in the sample played games with rules. In one session, a high level of interaction between the children was observed while in another the level of interaction between the children was actually very low.

In the first case, the activity was controlled by the children and the adult only intervened when they needed help, while in the second case the adult controlled every step of the game. The first case happened when Sam played a card game with a peer using the close circuit television. Sam's peer was familiar with the game and tried to explain it to Sam. The fact was that Sam could still not see the words and depended on his peer to read it for him. Besides, both children would have access to Sam's cards, but Sam did not have access to his peer's cards and therefore could not check if his peer really had the score that he was telling Sam.

Initially, Sam was winning and he was rather enjoying it, but then his peer won some cards and Sam did not understand why his peer was winning. This led to the children trying to explain to each other what they were trying to do and what their difficulties were. It was also clear that once Sam had a go at playing this

game he really wanted to become independent and play on equal terms with his peer.

The second case happened when Charles played alongside two peers and an adult. This case was mentioned above in section 4.2.2 when the children played a game that consisted of finding shapes with either some similarities or differences from another given shape. Occasionally, Charles would initiate conversation with the adult during waiting periods but the topics of such conversations were not related at all to the activity they were involved in.

In some instances, adults had difficulty in promoting social interaction and play by suggesting activities that were not accessible to the child with visual impairments. An example where the adult did not foster positive social interaction occurred during Tom's first play session. The adult proposed a task in which children had to take turns to fill the bottom of a box with shapes by fitting shapes next to each other. This was a rather difficult task as Tom is totally blind and visual clues were crucial for this activity. Tom tried to avoid this by proposing a different game, one based on pretending to build a scarecrow. This was not accepted by his peers and created a lot of conflict between the children.

Later the adult brought some more shapes and suggested another game. This time the children had to choose a small shape from a box and match it to one of the shapes that was filling the bottom of the first box in a single layer. Again, this relied a lot on visual clues. As a result, Tom ended up just putting shapes towards one of the corners of the box. His peers tried to say that it was not right, but then they gave up and just accepted that he was not able to do it and therefore was going to do it wrong all the time.

Another example occurred during Daniel's second play session. The adult stayed behind him and kept on talking to him whenever Daniel sought attention from the adult. Although there were some children playing with sand as well, Daniel did not interact with them except in very rare situations. The adult did not try to motivate Daniel to interact with the other children, did not explain what the other children were doing and did not try to extend his play. The adult just followed Daniel's pretend play characterised by a constant change of topic.

Daniel's topics moved from flowers to trucks, to snow pushers, then to Volkswagen cars, to concrete grounds, to "lrlrlr" (that he defined as sticking stuff) that comes out of the adult's leg, to real aeroplanes that also come out the adult's leg, to a sizzling noise that actually his peers were making, etc. An example of this session is shown below.

Daniel	Adult
Look there is a snow pusher here. A snow push::er.	
	A snow pusher? Well, Gosh that will be useful when it snows Daniel.
When it melts we'll push the snow.	
	That's a good idea.
There is a VW... there is a VW Beettle to be your c::ar.	
	Good!
I can * your car called a VW Beetle.	
	Oh that's what I just can do with a new car, my old one is *.
That's the VW Beettle making that noise.	
	Is it? It's a noisy VW is i t ? Oh! What a noisy car. Is it very noisy D?
(D uses a spade from side to side.) I'm making you a new concrete ground.	
	Oh! Thank you very much.

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

In this way, instead of promoting play and social interaction the adult was inhibiting of any possible interaction with other children. Daniel kept on turning his back to his peers so that he could talk to the adult. As the session moved on he presented more and more stereotypical behaviours such as shaking his hands and head and banging objects in the sand tray. By keeping on giving attention to the child without trying to extend or direct his play, or interest him in other's activities, the adult was reinforcing Daniel's play, characterised by a constant change of topic, lack of sequence and objective, just attempting to sustain the adult's attention. Even when Daniel showed interest in the noise produced by the other children's play, the adult did not take this opportunity to help the child join in the group.

Another example of the adult's difficulty in promoting social interaction and play was observed in Trevor's second session. He received lots of verbal input from an adult to perform the task, which was making a model from boxes and pieces of material. Every single step was explained to him and there was no interaction with other children. For example, Trevor heard a peer saying that he was making a rocket. After this, Trevor also wanted to make a rocket. The adult helped him make a rocket and suggested different materials for different parts of the rocket. However, Trevor was never shown his peer's rocket so that he could compare it and that could stimulate interaction between the children.

In summary, adults showed a variety of difficulties in promoting play and social interaction. Examples of sessions' descriptions made including obstacles observed can be found in Appendix 7. These difficulties were:

Finding out the child's interests and keeping the child on task - some adults asked children what they wanted to do without giving information about what was possible to do; other adults tended to direct children to an activity even if the

child did not seem to be very interested or gain socially from the experience. Some children accepted an activity but they would not stay on task because they were not really interested.

Expanding child's play - some adults showed difficulty in understanding what the child's intentions and needs were. Some children who were still exploring their environment and interested in learning about objects were prevented doing so by adults who thought it would make a mess. A child who kept on seeking attention from the adult was allowed to change subject all the time without the adult trying to build on his ideas.

Ensuring an organised physical environment that children with visual impairments could make sense of - in some situations there were so many toys spread out on the floor, in the sand tray, etc. that it was difficult for children to find or look for any particular object. On one occasion, a totally blind child walked over big wooden bricks, trays and containers with pretend coins, etc.

Mediating the environment by providing verbal explanation of events - adults showed difficulty in providing verbal explanation about what was happening around the children, what their peers were doing, what activities are available, etc. thus not promoting social interaction between children.

Making children aware of their peers - adults had difficulties when trying to interest or explain to children what their peers were doing.

Providing equal access to games and toys - the toys children with visual impairments played with were generally common to primary schools and with one exception there was no attempt to provide more suitable toys or to adapt games. This meant that children could not use the toys in the same way and this

promoted isolation. On one occasion, the games suggested by the adult were not accessible to the blind child and this instigated conflict and teasing.

Solving conflict between children - this will be considered in more detail in the next section.

Helping children using specialist equipment - on one occasion children decided to use a close circuit television to play a card game; when they tried to enlarge the picture they requested help from an adult who failed to do so, although it was technically possible to enlarge the picture.

Making clear who they are talking to - on one occasion, an adult talked to a group of children asking them to wash their hands; the child with visual impairment did not realise that the instruction was not directed to her.

On the other hand, social interaction between children with visual impairments and their peers was also faced with obstacles (see Appendix 7 with examples of descriptions). These obstacles were due to the fact that:

Children had difficulties in expressing their ideas verbally - for example, Elisabeth refused to follow her peers' play and tried to suggest something different but she could not explain what she wanted to do; Daniel's peers invited him to join them but had difficulty in explaining what they were going to do, once they did Daniel accepted the invitation.

Children seemed to be unaware that their behaviours could be inappropriate or hurt others - for example, Elisabeth refused to play with her peer by asking her peer to do her own sandcastle; Nelly tried to show her woobly tooth to a peer by opening her mouth and getting too close to his face.

Children had difficulties negotiating and agreeing with each other and therefore in solving conflict - for example, Nelly would not let go of a plastic bowl that her peer was using; Tom wanted to make a scarecrow with shapes which was not what his peers wanted.

Children with visual impairments had difficulty in identifying their peers and in following them physically - for example, Tom had difficulty in identifying his peers in the carpet area and once they left he could not follow them.

Sighted children had difficulty in understanding their peer's limitations and needs - for example, sighted children had difficulty understanding why Tom wanted to make a scarecrow with the shapes; some children failed to give or show an object (see Table 4.21). They also showed some discrepancies in their understanding, for example, Daniel's peer took his hand to direct him in direction of the table but tried to show him an object by holding it in front of his face.

Interactive Object Use	Init. by child with VI		Init. by sighted child	
	Success	Failure	Success	Failure
Giving or showing object	8 4	5	8 4	1 4
Take object away	2 5	7	1 8	1 8

Init. = Initiated

Table 4.21 - Success and failure in interactive object use.

These findings support the hypothesis that social interaction between adults or peers and children with visual impairments is faced with obstacles.

This section has been focusing on obstacles and difficulties in social interaction; this is not to say that there were not situations that promoted social interaction

when adults were able to mediate the environment and help the child. So, what interventions and strategies used by adults promoted play and social interaction between the children?

Adults play a very important role in structuring the environment, providing suggestions and keeping the child interested in a task, providing opportunities for the child to show interest in other's activities, interacting with the child at the end of a play session, requesting information about their play to help children express verbally their activities.

An example when the adult made a suggestion that allowed a child to have a more important role in the play scenario was observed when Daniel played at the "hospital". The home corner became a hospital and the teacher chose a group of six children (three boys and three girls) to play in there for the first time. As soon as they came in the two sighted boys became doctors and were taking care of some dolls who needed treatment, while the three girls put the nurses' suits on and stood around Daniel treating him. Daniel had bandages all over his body and kept on pretending that he was hurt.

After a while, the adult gave a doll to Daniel and asked him if he could treat her daughter who had fever. Daniel took his bandages away, picked the doll up and approached his peers who were treating dolls as well. Then, Daniel had a similar role to those of his peers (see Appendix 5).

In other cases, the adult was not so direct in suggesting an activity but provided information that allowed the child to take the initiative to interact with others. The adult and a group of children were at a table making models with boxes and cardboard. The adult asked questions and made comments on every child's activity. On this occasion, the blind child was interested in a model of a car that

one of the other children was making and asked to see it. The children ended up sharing their activity and the blind child tried to imitate his peer's model.

Another child, Elena, tended to move away from one area to another playing with different materials without having finished what she said that she was going to do. The adult tried to keep Elena on task, encouraged the child to use language and provide information concerning her peers who were involved in the same task. Without the intervention from the adult this child would not stay on task for more than a few seconds; the adult managed to keep the child at the task by introducing activities that would interest the child as can be seen below.

Elena	Adult
	So what do you say? Please do me up.
Please do me up.	
	Please do me up. Right, now... Nick is in there as well.
One, two... One.	
(E points to herself and Nick while counting the number of children playing with water.)	
	Off you go then to the water. Get some bubbles, shall I?
Yes pl::ease.	
I want the new ones... new ones.	
	Lets see what we've got. Well we have...
(Elena tries to get washing up liquid tub.)	
	Hold on... a squirt, only a squirt...
	No! Only a squirt. Right... now.
(Adult and Elena comeback to water tray and Adult puts washing up liquid in the water. Elena splashes in the water next to peer.)	
Finished.	
	Do you want a straw?
** a straw.	
(Adult and Elena make bubbles)	
	Right. Oh! They're big. Can I pop?
	Uuhh! They are lovely aren't they?
There.	
	Yeah. Lets push them up.

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

In summary, it was found that following factors are important to promote play and social interaction:

- physical environment,
- a group of children that remains the same for the session,
- opportunity to interact with children who have good social skills,
- information about any changes in physical or social surroundings,
- information about events and other children's activities,
- suggestions of play topics or tasks that are appropriate for the child,
- adaptation of play materials,
- understand child's needs and interests - according to their level of development and experience in a determined area,
- appropriate level of scaffolding.

4.2.9 Resolving conflict

A conflict occurs whenever there is a clash of opposite interests. When children recognise a conflict situation and try to solve it there can be important developmental gains. This has been studied by observing children performing a task in experimental settings (Bearison *et al.*, 1986; Light and Glachan, 1985) and it has been shown that children who discuss one another's perspectives, who listen and respond to their peers, who provided clarifications and explanations were the ones who gained most from the experience. Basically, they were able to provide scaffolding to one another.

In this study children were observed during play and the conflict situations observed were often related to the topic of play, the role of different children and

their actions etc. Transcripts of conflict situations observed can be found in Appendix 8. In total there were 22 conflict situations during play sessions observed at school. Table 4.22 shows the frequency of conflict situations children experienced and the play area in which they took place.

Children	TB/PS	Age	N° of situations	Play Area
Elisabeth	PS	5y 5m	3	Home corner
Elena	PS	4y 6m	1	transition from one area to another
Daniel	TB	5y 2m	1	Home corner
Anthony	TB	4 y	2	Home corner
Kevin	TB	6y 4m	5	Construction
Tom	TB	5y 5m	4	3 table - games with rules set out by adult 1 carpet area - puzzles
Nelly	PS	5y 11m	2	Home corner
Christine	PS	4y 9m	2	Home corner
Trevor	TB	3y 4m	1	Home corner
Sean	PS	6y 7m	1	Home corner/library

TB = totally blind child / PS = partially sighted child

Table 4.22 - Conflict situations.

As can be seen in Table 4.22, just over half of the conflict situations observed occurred in the home corner and both partially sighted and totally blind children experienced conflict situations. As mentioned in section 4.2.6, children tended to interact more with peers when they played in the home corner.

The motives of dispute varied from situation to situation but can be grouped in four categories. Table 4.23 shows the motives of dispute.

Motive of dispute	Children	Frequency
Topic of play (eg. playing ships and not tea time; using shapes to make scarecrow and not play a game with them, etc.)	Elisabeth Tom	5
Pretend roles and actions (eg. being dad, pretending to cut a rope, pretend to eat, etc.)	Elisabeth Christine Sean	5
Object possession (eg. children grabbing objects from each other.)	Elena Daniel Anthony Nelly Trevor	7
Performance of a task (eg. this bit is too high we need to change it, this will reinforce it, etc.)	Kevin	5

Table 4.23 - Motives of dispute.

An example of a dispute created by disagreement over pretend play and actions is shown below.

Elisabeth	Peer
No, no, no, you don't go in there, you are THE DAD, NO, no, ummmm, GET OU::T. Uhmm.....	
	No, I want to be in here. Elisabeth don't pull, Elisabeth do::n't.
Then you go in the *... now I was giving you...	
	Lets ring the ambulance, quick.
NO, I DON'T WANT, I WANT TO. (Elisabeth pulls P1) You can be the dad.	
	Alright.... I'll be the ambulance lady, yeah?
I was packing this... all this up now.	
	Yeah, and I was the ambulance lady, yeah?
No, I was calling the ambulance.	
	And I was the ambulance lady, yeah?
Pardon?	
	And I was the ambulance lady, yeah?
(Elisabeth never answered)	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

Eleven out of the twenty two disputes were solved while the remaining eleven were not solved. For a conflict situation to be considered solved the children needed to agree or accept the situation and carry on playing.

On two occasions adults were called upon to help and on three occasions the adult intervened to solve a conflict but in one of these situations the adult failed to do so. For example, Tom was playing at a table with 3 other children who were trying to fill the bottom of a box with shapes by fitting shapes next to each other. Tom tried to make a scarecrow instead but this was refused by his peers thereby creating conflict. When the adult was requested by one of the peers, she asked the peer to explain what they were doing and help Tom. As a result Tom's peers told him that he was doing it wrong and the conflict carried on. Then it was Tom who called upon the adult, who just said she was going to do something else and repeated the message to Tom's peers and again the conflict carried on. Children ended up calling each other "Silly" and "Nasty".

On two occasions the adult intervened successfully to solve conflict. In one of these situations occurred with Elena when she fought with another girl over a bag with playdough. The adult just said to the children to take it to a table and that they would share it. This was accepted by the children. In the second situation, Trevor wanted to play with both doors of a cupboard. The adult explained that the child could have one and his peers could have the other door and also why his peers needed one door.

On the third occasion when the adult decided to intervene, Anthony was grabbing toys away from a peer and explaining he needed to cook with them. While Anthony picked up objects from the floor his peer grabbed the toys again and when Anthony realised, he complained about his peer not letting him have the toys. The adult intervened and asked the peer to tell Anthony what she was doing and asked Anthony to ask for objects first. As a result, Anthony asked for objects but took them away without waiting for an answer, his peer never explained what she was doing or why she needed the object and ended up giving up objects and in the end just left.

The children who were able to solve a conflict situation took each other's point of view in consideration and provided verbal explanations. Kevin experienced five conflict situations which were all solved and he showed some understanding of other people's points of view. For example, once he asked his peer to give him a "twoer" but he checked his peer knew what he meant.

Kevin	Peer
Hum... Can you find me a twoer? Plea::se.	
(Peer looks in the box.)	
Do you know what a twoer is?	
	Yeah.

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

Examples of conflict situations that were solved are shown below.

Nelly	Peer
(Nelly touches bowls then tries to grab spoon that P1 is holding.)	
	Uah (utterance)
Ahaaah. I want my spoon. Give me *.	
(Nelly mixes with her hands, then she grabs spoon from peer and pulls it.)	
	Nelly.
(Nelly keeps pulling the spoon and peer keeps resisting. Nelly mixes and takes spoon to her mouth although peer is also holding it.)	
It's * my dinner. Isn't yours.	
(Nelly lifts bowl up to her head and almost puts her head inside it.)	
Have a fork.	
(Nelly keeps mixing and taking the spoon to her mouth. Both Nelly and peer keep holding the spoon. Then P2 gives wooden spoon to P1.)	
	P2 - Have this one.
(P1 holds spoon that P2 gave him and mixes with it. N has now a spoon to herself and each child has a bowl.)	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

Kevin	Peer
Hey! That's the problem.	
	What?
That.	
(Kevin touches a part of the house.)	
	No, it isn't.
Look, that's higher.	
	Come here, you haven't pressed down enough.
(Peer presses it down.)	
	That's it, look.
Yeah, it is, look. It's...	

Capital letters = loudness; colons = lengthened syllable; () = non-verbal behaviour; * = unintelligible word; (Utterance) = unintelligible utterance

When children (both sighted and with visual impairment) tried to solve conflict they found it difficult to express their ideas verbally and to understand each other's points of view. For example, Tom's peers could not understand that he was not able to fit shapes next to each other and therefore he would find it more interesting to pretend to make a scarecrow. On the other hand, they could not explain what they were doing and ended up just criticising him. These conflict situations are a good example to demonstrate that in order to promote positive social interaction it is necessary to provide scaffolding to all children including the peers of a child with visual impairment. These findings support the hypothesis that children with visual impairments face obstacles when trying to solve conflict situations.

4.2.10 Pretend play

Pretend play has an important role in children's development as it provides opportunities to develop language and social skills. The ability to engage in social pretend play is dependent on children's understanding of other people's beliefs and feelings (Youngblade and Dunn, 1995). As it was found that people interacting with children with visual impairments focus more on the child's own feelings and activities this may have an impact on these children's understanding of others. This would seem to be more obvious when children have a severe visual impairment. For the purpose of this analysis, pretend play episodes were considered when children engaged in pretend play for one whole minute at least. Pretend play that occurred for less than one minute was considered as a pretend action and not as an episode. In total, 16 episodes of pretend play were observed when children played in mainstream settings.

Groups of children	N° of children observed in pretend play	N° of episodes observed
Children who are totally blind and have additional difficulties n = 2	0	0
Children who are totally blind n = 6	3	5
Children who are partially sighted and have additional difficulties n = 3	1	1
Children who are partially sighted n = 9	7	10

Table 4.24 - Distribution of pretend play episodes by group of children.

As can be seen in Table 4.24 children who are totally blind and have additional difficulties did not show any pretend play. This is not to say that they are not able to engage in pretend play but when they were left or monitored by an adult with a set of toys they did not engage spontaneously in pretend play. Three out of the six totally blind children presented pretend play although one of them just for a short period of time. On the other hand, seven out of nine children who are partially sighted and have no additional difficulties were observed engaging in pretend play. Table 4.25 shows the different types and topics of pretend play presented by different children.

Child	Age	TB/ PS	Duration	Pretend Play		Topic
				Self or Role	Type	
Elisabeth 1	5y 5m	PS	11' 30"	Self Role	O S	Picnic ambulances
Mark 1	5y 6m	PS	1'10"	Self	O	fighting with spaceships
Mark 2	5y 6m	PS	2'50"	Self	O	as above
George 1	5y 4m	PS	5'20"	Self	O	car crashes and ambulances
Daniel 1	5y 2m	TB	9'40"	Self Role	O S	telephone conversation cooking birthday party
Daniel 2	5y 2m	TB	13'50"	Self	V	Various
Anthony 2	4y	TB	11'20"	Self	O	Picnic
Richard 2	6y 1m	PS	14'50"	Role	O S	Birthday party
Kate 1	6y 7m	PS	8'30"	Self	O S	Dinosaurs flying on aeroplanes
Christine 1	4y 9m	PS	14'	Role	O S	Mums and dads
Christine 2	4y 9m	PS	6'40"	Self	S O	Ponies
Alice 2	8y 2m	PS	15'	Role	O	Mums and dads
Trevor 1	3y 4m	TB	1'30"	Self	O	Ringing door bell and opening door
Trevor 2	3y 4m	TB	1'	Role	V	Spaceman and rocket
Sean 1	6y 7m	PS	1'40"	Self	O	cars/going on holiday
Sean 2	6y 7m	PS	2'20"	Role	A	Snow White and Aladin

TB/PS = totally blind or partially sighted
V = verbal / A = action / O = objects / S = symbolic

Table 4. 25 - Types and topics of pretend play observed.

In Table 4.25 the term self or role is chosen depending on the role the child took during play, i.e. children play as themselves rather than pretending to be someone else. When both terms appear in the same session the child played as self for most of the time but at some point there was a suggestion to adopt a role.

The roles taken in this group of children were:

Elisabeth 1 - did not adopt a role herself but suggested peer to be the dad,

Daniel 1 - suggested he was a dad when children pretended to have different names, said his peer was the big sister,

Richard 2 - played as the dad,

Christine 1 - played as the child and then mother of a doll,

Alice 2 - played as the baby,

Trevor 2 - played as the spaceman,

Sean 2 - played as cartoons characters.

The roles adopted by children with visual impairments were an interesting aspect of the pretend play observed. Negotiating and agreeing with peers about which role is adopted requires children to express their wishes, understand their peers' points of view and suggest alternatives. In some situations children with visual impairments were not allowed to adopt some roles. For example, Christine was the child when she played with two other girls and a boy. She then tried to be the mother but this was refused by the peers; she insisted she wanted to be the mother and then decided to be the mother of a doll. This alternative was accepted by peers.

Alice was playing as the baby and the action of the play centred around taking care of the baby, feeding her, giving injections to her, etc. Alice suggested being a burglar but this was misunderstood by peers who carried on treating her as the baby.

Sean's participation in pretend play was very variable. He had a role which was agreed with peers, but very often he would withdraw from the group and just

look around at the covers of books or displays. He followed his peers' actions and occasionally tried to suggest actions and events, but these were refused, especially by one of the peers who dominated the play. At some point Sean suggested that he was going to save his peers, but this was refused by his peer who wanted to do that himself.

Regarding the type of pretend play, four different categories can be identified. Verbal pretend play occurred when children talked about something in a pretend context with no specific actions or use of objects attached to play. Action pretend play occurred when children engaged in pretend play by verbalising and acting in a pretend context but not using objects. Pretend play with objects was considered when children played with objects in a pretend context but without changing its functional use, for example, pretending to drink from a cup. Symbolic pretend play refers to play characterised by the use of objects in a symbolic way, for example, a plastic bowl can be a hat; or when an object was given an active part in play, for example, a dinosaur feeling like having a fish or a doll being poorly.

Verbal pretend play was only observed when totally blind children played next to an adult. For example, Daniel was at the sand tray but kept on seeking attention from the adult by introducing different topics in a pretend context. Although he touched objects that were in the sand tray, he did not use them to pretend an action. Most of the time, Daniel banged toys on the sand tray, presented hand shaking or waved objects while speaking about cars, aeroplanes, etc.

Trevor engaged in verbal pretend play for a very short period of time. He was making a model of a rocket with an adult. He stoped this activity and initiated a conversation about going in the rocket he was building (zoom up in the sky). He presented hand shaking while he is engaged in this type of pretend play. The ability to pretend an action also depends on children's real experiences of that

action and therefore this is probably an obstacle for pretend play in totally blind children. They need to experience it themselves rather than watch someone else having the experience.

An example of action pretend play occurred when Sean played in the home corner that was also a library. There were not many pretend objects apart from some clothes. The children negotiated roles based on well known cartoon characters and acted the story.

Pretend play with objects was the type of pretend play observed most often. Some children presented this type of play most of the time but occasionally used objects in a symbolic manner as well, or attached feelings to an object. Most children who played in the home corner used pretend tea and diner sets with their usual function. The occasions when objects were used in a symbolic manner or when objects were given their own feelings is presented below:

Elisabeth 1 - plastic bowls were used as lunch boxes, peers tried to make a ship using bits of furniture,

Daniel 1 - his doll was poorly then died, cameback to life and died again,

Richard 2 - used a plastic bowl as a hat,

Kate 1 - dinosaurs did not want to fall off their planes, dinosaurs felt like having a fish,

Christine 1 - a plastic tub stood for a jug of water, doll saying "night night" to her,

Christine 2 - pony being naughty, being poorly, having a bath, looking in the mirror.

Pretend play develops from being centred in the child, to centre on others. The child begins to pretend to feed self, then to feed a doll and then to pretend that the doll does not want to eat. Pretend play also develops from single actions to a sequence of actions.

All of the following children - Elisabeth, Richard, Alice, and Christine (first session only) - showed a sequence of pretend behaviours. On the other hand, totally blind children tended to play with whatever toys they found first. For example, Daniel and Trevor pretended to make a phone call when they found the telephone, Anthony decided to cook when he found a saucepan, etc. They also spent more time exploring their environment, opening and closing cupboards or doors, feeling objects that were on shelves or worktops, etc. Anthony showed sequence in his play, i.e. cooking first and then having a picnic, but also spent time exploring his environment. These findings support the hypothesis that pretend play of children with severe visual impairments is faced with a range of difficulties.

4.2.11 Playing at home

Sessions of children observed playing at home were analysed using the same categories of social functions that were used for the main study. Only four sessions of 15 minutes each were analysed, but this study was developed with the aim of exploring children's behaviours in a different context from school. Two children, Daniel aged 5 years and 2 months and Anthony aged 4 years, were observed playing at home when their mothers and brothers were present. Daniel has an older and a younger brother while Anthony has an older brother.

In the school environment these children presented different behaviours. For example, Daniel tended to seek attention from the adult when she was present, while Anthony was not observed seeking attention from adults. They both played in the home corner for a session and they both were involved in conflict situations. Table 4.26 shows a summary of the play presented by the children at home.

Session	Context of play
Daniel 1	Conflict with siblings, Daniel avoids siblings and interacts with his mother. Asks questions about mother's actions and about his toy crane. Conflict with mother.
Daniel 2	Conflict with younger brother, Daniel continues playing with his brothers on sit and ride toy cars, having accidents and pretending to die. Rough and tumble.
Daniel 3	Cuddles and kisses with mother and younger sibling. Pretend play with younger sibling - pretending to be chickens and laying eggs.
Anthony 1	Played with sibling chasing each other on sit and ride toy cars and running. Fast moving along corridor and back into lounge. Older brother makes lots of vocalisations and sounds while racing, includes his brother in play and explains events to him. Conflict arose twice.

Table 4.26 - Play presented in the home environment.

Conflict situations arose when Daniel's older sibling kept on coming from behind and tickled him. Daniel protested by making noises and his sibling stopped, then a younger sibling approached Daniel and broke his toy crane. Daniel cried and mother intervened to stop sibling. The second conflict situation occurred when Daniel wanted his mother to make a cube with wheels for him. She started making it but she wanted him to put the wheels on himself; he refused but she insisted. In the end, Daniel's mother helped him by turning the wheel the right way up, told him to push down, etc and they did it together. The third conflict situation occurred when Daniel pushed his snow pusher against his younger sibling's lorry and insisted on pushing his car that way rather than moving it around. Daniel

explained it was a traffic jam but his sibling protested and then fell out of the lorry, stood up and carried on playing.

On the other hand, Anthony's conflict situations arose when his brother used Anthony's sit and ride car which made a distinctive noise. Anthony protested and his brother gave the car back to him. The second conflict situation occurred when Anthony lost a slipper in the corridor during a car race. Anthony screamed at his brother to give him the slipper. Their mother asked an older brother to find the slipper for Anthony which he did and threw it to Anthony explaining where it went: "Behind you." Anthony got the slipper and put it on.

Table 4.27 shows control of activity in the school and home environment for the two children observed.

Categories of control	Frequency of occurr ences			
	Daniel		Anthony	
	Home 45 min	School 30 min	Home 15 min	School 30 min
Controls peer/sibling	5	0	2	3
Controls adult/mother	7	1	0	0
Follows peer/sibling	5	4	11	4
Follows adult/mother	1	1	0	1
Refuses to follow peer/sibling	2	3	1	8
Refuses to follow adult/mother	2	9	1	0
Fails to control peer/sibling	17	1	1	1
Fails to control adult/mother	9	1	0	0
Fails to follow peer/sibling	6	0	0	0

Table 4.27 - Control of activity in the school and home environment.

As can be seen in Table 4.27, Daniel experienced much more failure in controlling siblings and mother at home than he did at school, but this is also due to the fact that he tried to control others much more at home (44 attempts) than he did at school (3 attempts). On the other hand, Anthony followed his play partners much more at home (11 times and refused to follow once) than at school (4 times and refused to follow 8 times). These comparisons cannot be made

without taking into consideration the difference in time children were observed in the different settings and the nature of play presented.

Categories	Daniel		Anthony	
	Home 45 min	School 30 min	Home 15 min	School 30 min
Gets attention from peer/sibling	0	2	1	1
Gets attention from adult/mother	6	22	0	0
Uses peer/sibling as resource	4	26	6	20
Uses adult/mother as resource	19	2	0	0
Is a resource to peer/sibling	0	0	1	1
Is a resource to adult/mother	3	24	1	0
Fails to use peer/sibling as a resource	3	4	7	10
Fails to use adult/mother as resource	4	0	0	0
Fails to be a resource to peer/sibling	0	2	0	0
Fails to be a resource to adult/mother	12	5	0	0

Table 4.28 - Attention seeking behaviours and resource categories in the school and home environment.

As can be seen in Table 4.28 Daniel used his mother as a resource while at school he kept on seeking attention from the adult. The same patterns of resource categories were observed when children played at home.

Children using others as a resource	**Peers**	**Adult**	**Sib.**	**Moth.**
Requests information concerning identity	8			
Requests information concerning the localisation of people or objects	15		4	
Requests other to take an action	3			10
Requests object	2		7	2
Requests information concerning the actions, wishes or feelings of others	4		3	1
Requests confirmation	5			
Requests information about own play			1	11
Requests general information	21	2	5	10

Table 4.29 - Children using others as a resource at home and in school.

Both at home and in school children requested objects and information regarding the localisation of objects. At home children also requested information about their own play, this happened mainly during Daniel's first session when he requested lots of information about his play with a toy crane.

On the other hand, requests made to the children in both environments were related to their wishes or play (Table 4.30).

Children being a resource to others	Peers	Adult	Sib.	Moth.
Child is requested to give information concerning own play	1	2 5		3
Child is requested to give information concerning own wishes, actions or feelings	3		1	1
Child is requested to give general information	1	2		1
Child is requested to give an object that he is holding	1			

Table 4.30 - Children being a resource to others at home and in school.

Although there are limitations due to the reduced amount of data gathered from the home environment, these findings suggest that the way children interact at home with siblings and mother has some of the same patterns but also some differences. In a more familiar environment, there is no need to check on partners' identities, and rough and tumble play was observed with children racing and fighting each other.

4.2.12 Performing a task in pairs

Two children from the sample, Daniel and Nelly, were also observed while performing a given task with peers (a boy and a girl) and with a teacher. The aim was to explore the interactions that sighted children or teachers and children with visual impairments established in order to perform a task together.

The tasks were not new to the children, but having access to visual information was certainly an advantage to be able to perform the tasks. Children were asked to use lego to build stairs against a wall, plastic beakers to build a tower and plastic cubes to build a cube. They were given a model so that they could feel and copy it. The task was introduced by the teacher and then the children were asked to perform it together, or the teacher would introduce the task and then perform it with the child. The session finished when the children completed the task or when after two attempts the task was not performed or was not performed by both children.

The two children reacted very differently in these more structured sessions. Daniel tried to get information from his peers on how to perform a task and when his attempts failed he would initiate conversation on a different topic such as start playing with the materials or saying that his granny had some beakers as well. On the other hand, Nelly had difficulty in sharing with her peers, she refused some of the tasks, she tried to perform other tasks by herself and when she failed she broke the models up and threw things on the floor.

Examples of difficulties that emerged in these sessions can be found in Appendix 9. The main difficulties observed were due to the fact that the sighted children were more interested in performing the task correctly with or without the child

with visual impairments. Peers showed difficulty in explaining how to perform the task, they referred to objects by mentioning its colours or by pointing, and often forgot show to the child which object they were referring to. The verbal exchanges between children were limited (especially in Nelly's case). There was no discussion about the performance of the task.

Sighted children tended not to talk to the child with visual impairments unless that was required by the child. The peers also tended to perform the task quickly without showing it to the child, so even if the child wanted to participate it would be difficult to know what was the next step that needed to be taken to perform the task.

On the other hand, the children with visual impairments showed difficulty in finding the pieces to perform the task, in following peers' activities and in knowing when the task was finished. Occasionally, the child also had difficulty in knowing which part of the model to build. Often they did not have an opportunity to see the end result of the task because their peers did not show it to them and they did not request it.

However, in Daniel's case, sighted children tried to provide some information and help the child, but most of this was in a non-verbal way. Some children tapped on a beaker producing noise so that the child with visual impairments could find it, occasionally they waited while the child with visual impairments felt what was being built or they put objects closer to the child so that it was easier to find it and took the hand of the child with visual impairments to an object. However, sighted children showed discrepancies in their understanding of the needs of the child with visual impairment. For example, the sighted child who tapped on the beaker to inform his partner where he could find it, also referred to beakers by mentioning their colours.

Sighted children had difficulty in combining different behaviours in order to provide the information that the child with visual impairments needed and mainly had difficulty in verbalising their actions and objectives.

The teachers presented a combination of behaviours but they especially talked to the child. They tended to explain the task and then let the child try to perform it and adjusted the level of information provided depending on the child's difficulty to perform the task. They encouraged the child to compare what was being built with the model provided and to identify what was different or missing. Teachers also organised the layout of objects and suggested that the child had a feel of all the objects present before deciding which one to use. They also gave the child time to find out which piece to use, where to put it, etc. Occasionally, teachers guided the child's hands to a particular object or part of the model. Mainly, they tried to avoid failure and to keep the child interested in the task, in some cases by using pretend play.

The situations observed illustrate how many activities developed in school are dependent on vision and how difficult it is for children to share a common ground of communication and understanding of each others' needs that allow them to co-operate.

As Light and Glachan (1985) indicated, children were more likely to gain from the experience of working with others towards an objective when they discussed each other's perspectives. Bearison *et al.* (1986) mentioned the importance of a mutual balance between partners and the need to monitor each other's reasoning. This seemed quite difficult to achieve with the children observed and with the given tasks. It would be important to observe children of different age groups and in a variety of tasks to analyse how that affects the interaction established

between the children. It would also be interesting to analyse children working in pairs in normal classroom activities and to analyse what effect it would have if adults had the opportunity to provide role models to sighted children on how to perform tasks together with children with visual impairment.

These findings support the hypotheses that peers and adult have difficulties when trying to perform a task together and that adults will adapt and scaffold the child's activity more effectively than peers.

4.3 Methodology

The chosen methodology presented some advantages and possibilities and some shortfalls. The fact that sessions were filmed provided opportunities to go back to the data and analyse different aspects of play and social interaction which were identified at a later stage in the research. This is a considerable advantage when analysing such a complex subject as social interaction. Although the use of filmed sessions is limited to what was caught on camera, participant observers who stay in a room making notes cannot observe everything and make notes of everything children do and say.

Therefore, an advantage of the methods used is the richness of information gathered. They included various situations and children in different settings showing a variety of behaviours, encountering a variety of difficulties and using different strategies to cope with the situation they were in.

A major possibility provided by the chosen methodology is that it focuses on real life social encounters between children with visual impairments and their peers in mainstream settings and at home. Although the use of video camera and the

presence of an observer can always have an effect on the children being observed, steps were taken to minimise these and in general the observed sessions show real examples of social interaction between different social partners.

The fact that some children were observed in different contexts provided the possibility of exploring obstacles and strategies used to overcome them in different contexts. This is an important way of highlighting aspects to be researched in the future.

However, there were also shortfalls in the chosen methodology. The fact that children were observed in mainstream settings meant that usually only one child was observed in each school. If this provided richness of information in a variety of contexts, it also meant that it was impossible to go back to the same context and observe again in order to analyse a selected aspect of social interaction or play. Besides, the fact that the observation focused on real life in school meant there was little control from the researcher in terms of what was going to be observed.

Another disadvantage of the chosen methodology is that it generates lots of data which takes a long time to transcribe and describe and are often difficult to analyse due to the variety of situations observed. The focus on real life social interaction implies complexity of situations being observed. Analysis of these complex situations needs to take into consideration a large number of variables present in each context. Therefore, it is difficult to generate specific conclusions without considering the variety of contexts and variables present and to generalise findings. However, that was not the objective of the study in the first place. The main aims of the study were to describe social interaction and play of children with visual impairments in mainstream settings, to identify factors that promote social interaction, to explore the effect of different contexts on children's social interactions and to identify possible areas for further research.

Another disadvantage of the chosen methodology is that in generating lots of data there are many interesting aspects to analyse but it is not possible to examine all of them. This was overcome by selecting some aspects that were analysed and reported. On the other hand, this identification of areas that can be researched in the future was one of the aims of the study.

5. Discussion and Conclusions

5.1 Introduction

This research focused on the observation of children with visual impairments during play and social interaction in their real settings. It involved observing children in different schools in a variety of geographical areas. In doing this research it was accepted that children with visual impairments present a wide range of conditions and levels of impairment, that some may have additional difficulties and that the conditions of their natural environment are complex and cannot easily be controlled by the researcher.

Until recently, play presented by children with visual impairments has been studied in laboratory conditions, often with the aim of comparing their behaviours to those of sighted children (Parsons, 1986a, 1986b). The focus was on the role of vision for children's development and implications in its absence.

The reason for focusing in this study on play and social interaction in natural settings is that the research questions were related to the quality of experiences of children with visual impairments in these settings. The research does not focus on the child alone as the subject to be studied, but also on the implications that the physical and social context have on the situations experienced by children.

The research therefore raises questions about the quality of social interaction during play experienced by children with visual impairments in mainstream

settings and the role which different physical and social contexts play in these children's social experiences. By answering these questions it was intended to identify factors that promoted positive social interaction and thus provide an opportunity to answer another question namely, how can we improve social interaction? Additionally, the research also focused on exploring social interaction in more controlled situations, i.e. children performing a pre-determined task in pairs.

The answers to these questions are of major importance to practitioners in this field. After all, it has been demonstrated that children develop and learn from interacting with more experienced social partners (John-Steiner *et al.*, 1994; Light *et al.*, 1991; Rogoff, 1990; Wood, 1988; Woodhead *et al.*, 1991). However, this is an area in need of much research in the field of visual impairment.

5.2 Objectives

In order to answer the previously mentioned questions, it is important to describe what experiences children with visual impairments have when interacting with others in their natural settings.

Therefore, an objective of this research was to describe play and social interaction presented by children with visual impairments in mainstream schools in encounters with adults and peers. This was achieved by observing children playing in their natural settings and analysing the forms of play they presented and the level of interaction observed, and by transcribing and describing the play sessions with particular attention to the social functions of their behaviours, language, obstacles to social interaction and strategies used.

The analysis of these sessions focused both on the behaviours directed from the child to others as well as behaviours directed to the child by peers or adults. The social functions of behaviours observed focused on attention-seeking, being a resource and using others as a resource, control of activity and interactive object use. Other aspects that emerged during the study were also analysed, such as conflict situations and pretend play.

Another objective of the research was to describe the use of language by children with visual impairments as a means of social interaction in encounters with adults and peers. This was achieved by describing the use of language in the descriptions of each session and by selecting some aspects that were analysed more in detail, such as using others as a resource and conflict situations.

One of the objectives of this research was to identify factors that foster social interaction and this was achieved by looking into the characteristics of the overall situation and strategies used that promoted social interaction. These factors were related to the next two objectives. On the one hand there were factors that were related to some characteristics of the children themselves and this leads to an objective of the research, i.e. to identify possible correlations between the characteristics of children with visual impairments and the quality of interaction enjoyed with peers or adults. This was achieved by analysing the relationship between age and severity of visual impairment of the child with different categories of social function, for example, the control of activity by adults.

On the other hand, other factors that foster positive social interaction were related to the context of the situation, which leads to another objective of the research, namely to explore the effect of different contexts on children's social

interactions, in particular, the strategies adopted by adults in promoting social encounters. This was achieved by analysing both social and physical characteristics of contexts observed and their impact on social interaction. The role of the adults involved was also analysed by looking into strategies used and their impact on children's social interaction, for example, adults' attempts to solve conflict, to control children's activities, etc.

The last objective of the research was to identify areas that need further research. The methodology chosen generated lots of data and many interesting aspects emerged from the data as well. This provides a range of opportunities for further research.

5.3 Research focuses

In the present study it was found that children with visual impairments presented a variety of play behaviours, faced a variety of difficulties in play and social interaction and showed a variety of ways of coping with these difficulties. It was also found that many of the difficulties that arose during play sessions were contextual rather than within-child factors.

This section begins with a model of social interaction for children with visual impairments, which summarises the findings of the research. These findings are then divided into different research focuses and discussed in more detail.

5.3.1 Model of social interaction

By focusing on social interaction during play activities of children with visual impairments in mainstream settings, the present study identified factors that determine the quality of social interaction established in these settings. In summary, children with visual impairments presented a variety of play behaviours and faced a variety of obstacles that were a combination of factors within the child, such as age and severity of visual impairment together with contextual factors such as type of activities and materials used, spatial organisation and the characteristics of the social environment. What emerged from this study is that there was no evidence that a child with visual impairment would be unable to engage in any form of play but there were expectations from adults which did not always promote play. Adults tended either to control the activity or to leave it to the children, rather than supervise it and expand it.

The different factors that promote play and social interaction and their inter-relations are shown in figure 5.1. One factor determining the quality of social interaction is the physical context, including (1) how the layouts are organised so that children feel secure and able to find objects, (2) the nature of activity which is adapted to the needs of children with visual impairments, being interesting and challenging but ensuring opportunities for positive interaction with others and (3) the accessibility of materials which provide equal opportunities to children with visual impairments.

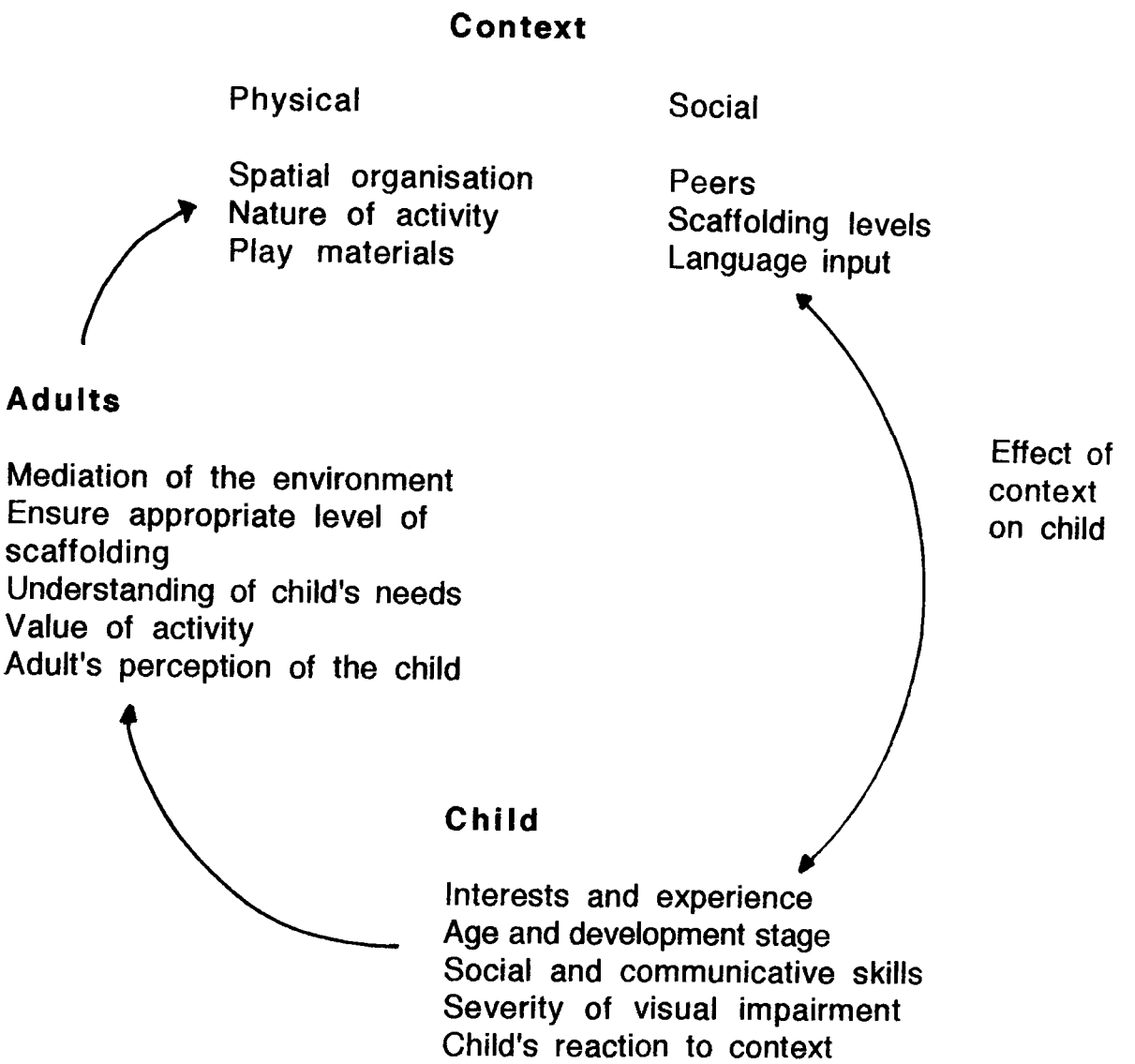

Figure 5.1 - Factors determining the quality of social interaction

Another factor that determines the quality of social interaction is the social context. This includes the sighted children involved and their ability to understand and adapt to the needs of children with visual impairments, the level of scaffolding of the overall activity and the language input that is available.

The role of adults is another factor determining the quality of social interaction. They can be part of the social context at the time a child is involved in an activity, but well before that point, they are also responsible for ensuring that the activity has been planned taking into consideration all other factors so that children with visual impairments have real opportunities to establish positive social interaction with others. The role adults play depends on their

understanding of the child's needs, the value they attribute to a particular activity and on how they perceive the child.

This is related to the activities used by adults to assist children as argued by Rogoff (1991). Therefore, the adults' theories of the child, of the task and of the support required influence their management of the learning environment and activities presented to the child. Their sensitivity to assess what support the child needs in a particular situation is essential for presenting appropriate levels of scaffolding.

It is important that adults understand that the context has an effect on the child's opportunities to succeed and therefore, explore contextual factors that may be limiting the child's success rather than attributing failure to the characteristics of the child.

Another aspect that adults seem to overlook is the impact that sighted peers can have on the organisation of the social setting. Sighted children can learn strategies to adapt their interaction skills when dealing with children with visual impairments and they can be a model as well. However, sighted children are children themselves and they have difficulties understanding the point of view of another child who does not share the same sensory information as they do. Adults play an important role in helping sighted children to understand the point of view of children with visual impairments rather than just making sure that they do not mistreat each other.

Adults seem to lack awareness of the importance of their role during play activities. This may be influenced by the fact that adults consider children to be responsible for play and social interaction with their peers in free activities (MacCuspie, 1992).

Another factor determining the quality of social interaction is the children themselves. All children are different and have their own preferences and interests. Besides, they also have different life experiences which determine their ability to understand their environment. The severity of their visual impairment has implications on how much visual information they have access to and this plays an important role in allowing children to move more freely in their physical environment, finding objects at a distance etc. The child's age, their developmental stages and social and communicative skills are also aspects that influence the child's ability to cope in a particular setting, but also how others' perceive the child.

It is the combination of all these factors in a particular situation that promotes or limits the opportunities for children with visual impairments to participate in positive social encounters with others.

5.3.2 Social interactive skills

Interacting with others is essential for children's development, but for children with visual impairments many of the cues that stimulate this interaction are not accessible. This section focuses on the adult's perception of social interactive skills of children with visual impairments and their social adaptation.

It proved difficult for some parents to express their views, especially those who were unhappy about providing information about the social interactive skills of their children. In fact, 25% of the parents did not provide the information and were not happy about other people providing information on this subject regarding their child. In five cases (out of 15) children with visual impairments

were considered to have a poor social adaptation due to poor social skills, difficulty in mixing and making friends, difficult behaviour, difficulty in dealing with conflict and low self-esteem.

From the information gathered regarding 15 of the children it became apparent that adults considered these children to be weak at solving conflict, sharing, negotiating with others or inviting a friend to play. Some adults mentioned that the children liked to have their own way. These weaknesses were present in both children considered to have good and poor social adaptation.

This tendency to like having their own way may be a consequence of these children's limited access to their environment and to their difficulty in understanding the other's point of view, especially when this understanding depends on accessing visual information. Previous research has suggested that this may also be a consequence of a more child-centred and directive communication style that is adopted by adults when interacting with children with visual impairments (Urwin, 1983; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). In the present study it was equally found that children with visual impairments were exposed to more directive communication styles as it will be mentioned in the next sections.

5.3.3 Individual differences and the diversity of play

In this section, I will concentrate on the play behaviours presented by children with visual impairments taking into consideration the context they were exposed to. In previous research it has been reported that the play of children with visual impairments is more repetitive, self-contained and less symbolic or imaginative (Tait, 1972a, Mogford, 1977, Parsons, 1986b). By observing children in their

natural environments, this study analyses what behaviours children with visual impairments present in real life situations rather than in experimental conditions.

In the present study it was found that children with visual impairments presented a wide variety of play behaviours. Some children engaged in pretend play in the home corner, constructive play, art play, sand and water play, playing with sound-making toys, pushing cars along, etc. A similar finding was found by Ferguson and Buultjens (1995) who observed children with visual impairments engaged in different forms of play, including functional, creative, exploratory, imitative, collaborative and fantasy play.

Although adults had different attitudes regarding play of children with visual impairments, it was observed that children with various degrees of visual impairment could engage in different forms of play. These attitudes from adults can become an obstacle to the development of play if a child is considered not to be able to engage in a particular form of play due to their visual impairment.

Although a great variety of play behaviours was recorded, it was observed that there were some distinct trends such as the fact that some children spent a large amount of time not playing. Two children who are totally blind and have learning difficulties spent over 50% of the observed time not engaged in play. These children spent a lot of time exploring their environment by exploring the contents of cupboards and drawers and by putting objects in and out of boxes, rocking and moving from one area to another. They spent more time manipulating objects than in social play with their peers. They tended to play on their own or in the presence of an adult and they were exposed to directive styles of communication, adults tended to stop children's activities and asked them to tidy up toys.

Two other children spent just below 50% of the observed time not playing. They are partially sighted, one of which has a language impairment and the other only a moderate visual impairment, but both were considered to have poor social adaptation. The child who has a language impairment interacted mainly with the adult rather than peers.

Stereotypical play was also observed mainly in children with additional difficulties including the two blind children with learning difficulties and a partially sighted girl with diplegia.

These findings partly support earlier research on the more narrow functions of some children's play, but they also extend it: a visual impairment is not an inevitable obstacle to the development of play. Children with severe visual impairments in mainstream settings need extra time to familiarise themselves with their physical and social context so that they can participate actively and form friendships. Adults play an important role in promoting social interaction and play.

Therefore, from observing children in everyday settings, we can conclude that children with visual impairments present a variety of play behaviours, but that some children are still spending a lot of time exploring their environment and are unaware of the meaning of events and activities occurring in their environment to allow them to participate actively in play. Although some of these characteristics have been mentioned in previous research (Parsons, 1986b), such as the reduced amount of time spent in active play and more time spent waving objects, etc.; it was found that this was not the case for all the children with visual impairments and that the input from adults and other contextual features had a role to play in the behaviours presented by the children.

This fact has a major implication for the education of children with visual impairment as it calls for the planning and organisation of the environment as a way of promoting the active participation of these children and fostering development. Additionally, this has implications when considering inclusion of children with visual impairments in mainstream settings and reflects Allan's (1994) argument that successful inclusion depends on effective collaboration between specialist and mainstream staff.

5.3.4 Visual impairment, maturity and interaction

5.3.4.1 Interaction with adults

The children's age and severity of visual impairment were found to be factors that influenced the level of input from adults. It was found that younger children spent more time on a one-to-one basis with an adult while children with more severe visual impairments tended to be in the presence of an adult, whether or not there were sighted children around. Besides, the less severe the visual impairment of a child the less his or her activities were controlled by adults. Therefore, adults tended to direct and manage the behaviour of young children or those with more severe visual impairments.

These findings relate to the four quadrant framework for adult-child interaction (Webster and Wood, 1989). Some children were subject to more control from adults, complied with instructions and were more passive, giving few contributions to the play activity. Children who were subject to this kind of interaction tended to present more severe visual impairments and/or to be the youngest in the group. For example, when Trevor (a totally blind child who is the

youngest in the sample) was sticking pieces of material, the adult stayed next to him and gave instructions about how to use the glue stick, how to spread the glue, etc.

On the other hand, more mature children with not so severe visual impairments were not subject to such control from adults. They were allowed to interact freely with their peers with occasional intervention from adults when that seemed appropriate or was requested by the children. For example, Sam played a card game with a peer using a close circuit television, and adults only intervened when the children requested some help. Elisabeth played with a peer at the sand tray and the adult intervened only to stop the children throwing sand on the floor.

Workman (1986) found that adults had a very important role in mediating the social environment and that when the teacher was not present the interaction between children with visual impairments and their peers was unlikely to occur. Workman (1986) identified strategies that promoted social interaction which include describing the social environment, providing direct prompts (such as 'give some food to the doll') to the blind children and indirect prompts (such as 'everybody join hands') to sighted children.

This relates to the ability of adults to extend the child's understanding by bridging between their inner world and the world outside (Rogoff, 1991). Adults play an important role in controlling aspects that are outside the child's grasp so that the child can concentrate on the aspects that are within their range of competence (Wood, Bruner and Ross, 1976). In terms of social interaction and play, children with visual impairment need contextual information that allows them to participate more actively in social encounters.

However, it was observed in the present study that adults had difficulties in achieving this and often they hinder rather than promote social interaction. This finding does not confirm Workman's finding (1986) that adults promoted social interaction. We can speculate that adults' ability to scaffold depends on a range of factors. One of these factors is the nature of the task and how adults understand the task.

We can thus conclude that the level of support provided by adults is influenced by the child's characteristics and that adults are not always able to promote social interaction and play.

What was found in the present study is that adults showed difficulty in scaffolding children at an appropriate level, i.e. when they were present throughout a session they tended (1) to over-scaffold the child's activity such as in the case of a totally blind boy who played a game with rules controlled by the adult, (2) to be present and keep lines of communication open but without expanding or developing the child's play.

The adult's difficulty in promoting play and social interaction was found to be due (1) to their difficulty in understanding the child's interests and needs which resulted in proposing inappropriate activities which relied on vision, (2) to their difficulty in expanding children's play and (3) to their tendency to direct and control children's activities.

The implication of this finding is that an inappropriate level of input from adults may have an effect on the development of independence and self-esteem of a child and may also affect positive social interaction between children.

This relates to the finding from previous research that a more directive communication style is often adopted by adults when interacting with children with visual impairments (Urwin, 1983; Kekelis and Andersen, 1984; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997). The findings of the present study also add evidence that this more managerial style of interaction from adults increases with the severity of visual impairment presented by a child. This increase of control in spoken exchanges by adults was accompanied by an increase of their physical proximity with the child, restriction of certain activities and management of children's behaviour. These findings reveal the importance of developing adult's understanding of the needs of children with visual impairment in areas such as play and social interaction.

We can conclude that the level of scaffolding adults provide has major implications for the quality of social interaction and play opportunities children experience and that social interaction between children with visual impairments and their partners is fraught with obstacles. This relates to the hypothesis that social interaction between children with visual impairments and their peers or adults is faced with obstacles.

5.3.4.2 Control of activity

It was found that the severity of visual impairment was a factor that influenced the control of children's activity by adults and the child's ability to control others. Overall, the less the severity of visual impairment, the less children's activity was controlled by adults. Additionally, children with less severe visual impairments presented a higher frequency of situations where they managed to control their peers' actions. This is also due to the fact that these children are not

subject to high levels of control from adults and therefore, have more opportunities to interact with their peers.

This finding suggests that children who have some residual vision are more likely to access cues from their environment that allow them to control their peers' actions. The fact that children with more severe visual impairments have more difficulties in controlling others' actions can have implications for the quality of their interaction with peers. For example, the two totally blind children with learning difficulties presented very few attempts to control their peers' activities. These attempts were furthermore unsuccessful and therefore these children may be less stimulated to attempt to control the activities of others.

In order to be successful in controlling others' activities, i.e. by proposing a topic of play, an action, a pretend event, children need to gather some information about what could interest their peers. Besides, when they are unsuccessful they need to negotiate with their peers by trying to understand their points of view and by making alternative suggestions that would be accepted by both parties. For children who have limited experience and limited access to information this can be a very demanding task.

On the other hand, if children experience failure they will probably feel incompetent thus affecting their motivation to interact with others. This is in agreement with Guralnick's (1990a) findings that less interactive behaviours presented by children with special needs are sometimes due to their difficulties in accessing and interpreting social clues. This finding adds to our understanding of social interaction between children with and without visual impairments. Vision plays an important role in allowing children to gather information that

enables them to find strategies to negotiate with others. For example, offering a toy, suggesting an alternative activity, using objects from their surroundings.

5.3.5 Child as a resource

Using others as a resource is an important strategy to access information that is not available to the child with visual impairments. On the other hand, the use of children with visual impairments as a resource to peers and adults reflects how far they are valued as play partners. It was found that the older the children with visual impairments are and the less severe visual impairment they have, the more they are used as a resource by their peers, i.e. they were asked to provide information or help to their peers. However, when subcategories were created and analysed on different types of information required, it was found that children with visual impairments were requested by their peers to provide information regarding their own actions wishes or feelings (43%). Adults also requested information regarding children's actions wishes or feelings (52%) and regarding the child's own play (39%). On the other hand, children with visual impairments requested objects or information about the localisation of people or objects, or requested others take an action. These findings were also observed when children played at home.

These findings show that children with visual impairments are often exposed to requests that focus mainly on their own actions and play. Their difficulties in accessing information from their environment means that their partners do not expect them to provide help or information unless that information relates to themselves. This is another limiting factor for children with visual impairments due to the fact that if children are not expected to know, they will probably not try to find out.

This tendency to focus on the child's own play, actions, etc. is used as a strategy to find out what interests the child. Social partners show difficulties in introducing children with visual impairments to external objects or events (Erin, 1990; Andersen, Kekelis and Dunlea, 1993). These findings relate to the more child-focused communicative style (Andersen, Dunlea and Kekelis, 1993) which in the present study was not only adopted by adults but also by peers.

These findings extend some of the observations made by other researchers (Andersen, Dunlea and Kekelis, 1993) by including peers as social partners and by showing how maturity and severity of visual impairment of the child influence their value as play partners. Therefore, in some cases, strategies used by adults seem to reinforce child-focused activities and isolation rather than link the activities of children with visual impairments with those of surrounding children.

5.3.6 Pretend play

One aspect that was analysed was the occurrence of pretend play episodes. It was found that children who are totally blind and have learning difficulties were not observed engaging in pretend play. It was also found that children who are totally blind presented more verbal pretend play without the use of objects or performance of actions related to their pretend activity. Instead, there were situations in which these children shook their hands while verbalising their pretend activity. This finding is in agreement with Ferguson and Buultjens (1995) research on play where they found that blind children engaged more often in verbal pretend play than object pretend play.

In more mature stages of pretend play, children are able to present sequential combinations, to engage in different roles, to give an active role to inanimate objects, to use objects in a symbolic way and even to be independent from objects to develop their play (McCune, Dipane, Fireoved and Fleck, 1994). It was found that the presence of residual vision was an advantage in allowing children to find toys more easily and use them in a symbolic way. Children who are totally blind tended to play with whatever toys they found first and therefore the sequence of play presented depended on the objects found. In one situation, when a child engaged in verbal pretend play there was also a constant shift of topic. In another situation, a totally blind child presented sequence in his play but he took time to explore different parts of his physical environment in order to get an idea about what objects were there.

Although blind children were not necessarily dependent on objects to engage in pretend play such as when they engaged in verbal pretend play, they tended to present mannerisms rather than act in a pretend way.

These findings show that children even with very severe visual impairments do engage in pretend play. However, they face obstacles as they cannot spontaneously imitate others' actions nor find toys. Therefore, it is more difficult for them to plan a sequence of pretend play using objects as they do not know which objects are there and where they can find them. These findings support previous research which suggests that children with visual impairments often engage in different forms of pretend play, namely verbal pretend play (Mogford, 1977; Ferguson and Buultjens, 1995) and expands these findings by taking into consideration the contextual factors that limit pretend play such as difficulty in planning a pretend sequence.

5.3.7 Conflict

Previous research has shown that in order for children to gain cognitively from a conflict situation, both partners need to be active, they need to take each other's perspectives into consideration and to be able to verbally express them, to take turns and listen to their peers, to monitor their reasoning and develop a shared means of communication (Mugny, Paolis and Carugati, 1984; Bearison, Magnazamen and Filardo, 1986; Azmitia, 1988; Forman and McPhail, 1993).

In the present study, it was observed that these features of conflict situations were not common when children with visual impairments interacted with their peers. Children faced problems when trying to express their ideas to influence their peers' actions. They tended to reject their peers' proposals or direct their peers, rather than negotiate with them and try to find an agreement.

Half of the conflict situations observed were not solved, including two situations where children requested the help from an adult and another where the adult decided to intervene. The children who solved the conflict between them were able to express their points of view and showed to each other why they thought that way. On one occasion, a second peer solved the conflict by bringing an object so that both children involved in the conflict could have an object.

Half of the conflicts were not solved and there were different reasons for this, namely (1) due to the fact that children with visual impairments ignored their peers and carried on with their activity, or (2) their peers did not understand their points of view and were not interested in negotiating (the sighted children said that they were right and the blind child was wrong), (3) the child with visual impairment lost interest over the object or (4) did not recognise that the peer had a different point of view.

Another important aspect that was observed was that adults had difficulty in helping children to solve conflict. Adults tended to ask children to tell each other what they were trying to do or to ask before taking an object. This was insufficient as children had difficulty in understanding the given information or the overall context. Adults did not provide scaffolding to children that would allow them to exchange relevant information leading to a mutual understanding of each other's point of view.

These findings show that children with visual impairments face obstacles when trying to solve conflict situations due to the lack of information they receive from the environment, the limited understanding of their peers regarding their difficulties and the low level of scaffolding from adults.

For example, one adult requested that the blind child should ask for an object before taking it from a play partner during a cooking episode. The child did this but he did not wait for an answer from his peer. Besides, he did not realise that his peer also wanted to cook and that they needed to share the available saucepans. As a result, the sighted child tried to take objects away when the blind child left them on the worktop, which generated complaints from the blind child because he could not find his toys. The sighted child waited and watched the blind child without saying anything and then just left. Although the conflict ceased it was not solved and the blind child never understood the overall context in which it occurred.

The intervention from adults when trying to solve conflict between children consisted of directing the children rather than providing a verbal explanation of the overall context in which the conflict took place. Again this relates to previous findings of the adoption of more directive communication styles by adults when

interacting with children with visual impairment (Urwin, 1983; Andersen, Dunlea and Kekelis, 1993; Preisler, 1997).

We can thus conclude that conflict situations pose a big challenge for children with visual impairments and that to be able to solve these situations with their peers, both partners need to recognise each other's point of view, including the fact that a child may have particular difficulties due to their visual impairment. On the other hand, children with visual impairment need to gain information from their environment so that they can identify what caused the conflict. This information can either be given by an adult or a peer. Additionally, children with visual impairments can learn strategies to request such information.

Adults could mediate these situations by listening to the points of view of both parties, identifying the contextual features that would foster agreement, providing verbal information about the overall context and providing alternative strategies to deal with conflict. For example, in the cooking episode mentioned above, the adult could have asked each child what the problem was and supported their explanations by providing different possibilities. It seemed that the sighted child had difficulty in expressing herself verbally and therefore she needed scaffolding. The adult could have asked "Do you want to do some cooking as well?". This would also inform the blind child about his peer's intentions which were obvious for sighted people but not for him. Then the adult could have asked the children about how they could solve the problem, inform about the availability of saucepans, etc. In doing so, the adult would promote the children's active participation in trying to solve the conflict but supporting them on the aspects that were beyond their grasp.

Furthermore, adults can choose play partners and create familiar routines of play, which would contribute towards negotiation and less unsolved conflict between children.

Dealing with conflict situations is an important aspect of children's development. When children have not acquired strategies that allow them to gather information from their environment and to take into consideration others' points of view, the presence of a visual impairment can compound the establishment of a shared means of communication. This shared means of communication is essential to be able to negotiate with others. Adults could consider conflict situations as an opportunity to develop children's understanding of others' feelings and intentions. This would promote social understanding. Instead, some adults seemed rather preoccupied in ending the conflict even at the price of isolating children.

The analysis of conflict situations was an aspect that emerged from the data gathered in the present study. These findings expand our understanding of difficulties that arise during social interaction of the importance of using these situations as a learning opportunity. In terms of intervention, it is the adults scaffolding of both children with and without visual impairments to allow them to share their view points.

5.3.8 Selecting partners

Previous research has found that children with visual impairments tended to interact with adults rather than peers (Tait, 1972a; Parsons, 1986b; Preisler, 1993). Some previous studies observed this while children were playing with a set of toys in a special room in the presence of an adult. Their interaction with adults was mainly achieved by asking questions which they used to keep lines of

communication open, rather than obtaining information about their environment (Tait, 1972a; Parsons, 1986b). Another study by Preisler (1993) found that blind children in everyday mainstream settings preferred to move away to a quiet area where they could be on their own or interact with adults.

This tendency to interact with adults underpins one of the hypotheses of the present study and this finding was only partially confirmed. This was due to the fact that children did not move away from one area in order to be alone or interact with adults, but they tended to interact with the adult when they were present throughout the play session. Besides, whenever the adult interacted with the child throughout a session it was the adult's decision whether to direct or to monitor the child's activity. Whenever children requested help from an adult they tended to return to their play activity after receiving help from the adult.

But in the presence of adults, the children with visual impairments would tend to interact with the adult. As mentioned above, adults showed difficulty in promoting social interaction between children and therefore the tendency to interact with the adult was in fact an obstacle to interaction with peers. This finding does not support Workman's (1986) findings that without the mediation from adults, social interaction between children was unlikely to occur.

Another aspect of social interaction mentioned in previous research is that sighted children think that boys with visual impairment interact more with girls than sighted boys would (MacCuspie, 1992). In the present study it was found that girls with visual impairment tended to play within a group of boys and girls or only with other girls, while the boys with visual impairment played within groups of boys and girls, only with boys and only with girls. It was also observed that in some situations girls tended to approach and interact with boys with visual impairment more than boys did, but in others boys with visual

impairment preferred to interact with boys. This however, may be affected by the type of activity children are engaged in, for example, interacting with sighted boys in the playground does probably pose many more challenges to a child with visual impairment while girls may be more likely to join in.

Children's difficulty in finding toys and other objects has been mentioned as a problem for children with visual impairments in mainstream settings (Preisler, 1993). One implication from this is that objects, together with imitation of gestures and actions, are often used by young children as an opening move to engage with other children.

In the present study it was observed that a considerable percentage (40% for totally blind children and 39% for partially sighted children) of successful attention-seeking behaviours presented by children with visual impairments involved showing an object or action to a peer. On the other hand, sighted children experienced more failure when they tried to show objects or actions to children with visual impairments.

The implication of these findings is that both sighted and visually impaired children need to be sensitive and adapt the strategies they use in social interaction to the needs of their partners. In order to achieve this, children need to participate in a variety of social encounters and acquire a range of communicative skills and strategies. Once a repertoire of strategies has been acquired, children can select those strategies that they identified as being the most effective in a particular situation (Rogoff, 1990; Shugar, 1993).

5.3.9 Play contexts

One of the hypotheses of the present study is that contextual factors play a major role in promoting play, language and social interaction. In the present study it was observed that contextual factors and not just within-child factors influenced the quality of social interaction and play experienced by children with visual impairments.

5.3.9.1 Spatial organisation

The organisation of space is an aspect that has implications for children's opportunity to engage in play activities and social interaction. Characteristics of the physical context which limited play consisted of large play areas with toys spread out on the floor, too many toys or objects in a particular area such as in the sand tray and materials that were not accessible to the child with visual impairments. This is in agreement with Schneekloth's (1989) findings that children with visual impairments preferred to play with equipment rather than in open spaces and that they needed boundaries and physical edges within the play space.

Children with severe visual impairments tended to play with whatever toys they found and therefore, they did not have the same opportunities to plan and structure their play as their sighted peers. They also spent more time moving from one area to another or exploring their physical surroundings. This finding confirms that of Preisler (1993).

5.3.9.2 Selection of play materials

The access to play materials that are meaningful to the child with visual impairments is an important factor in promoting active participation. Selecting toys that were not accessible to children with visual impairments meant that they did not have opportunities to engage in the same play activity. For example, when playing with dominoes and puzzles which needed to be matched by drawings and colours, blind children ended up building with the pieces rather than playing dominoes or making puzzles. This in turn discouraged social interaction.

Inappropriate activities and materials promoted isolation and conflict between the children and in the present study it was observed how often these situations were ignored by the adult. The fact that adults ignored these situations seems to be in agreement with MacCuspie's (1992) findings that adults considered it to be the child's own responsibility to make their own friends and to interact with peers.

5.3.9.3 Type of activity

The type of activity children engaged in had an effect on the amount of time they spent playing or interacting with others. In terms of play, it was observed that whenever children engaged in constructive play they spent a large amount of time playing. In these situations the constructive toys were usually in a box by the child and therefore the child just had to look for toys that were in that box. In some cases, the child with visual impairment requested help from his peers to find a particular piece that was needed.

In terms of social interaction, it was found that areas such as the home corner promoted social interaction. Social interaction was also promoted by children being involved in a group activity such as building a model together or playing a game if the materials were accessible and if the activity was controlled by children rather than by adults.

These findings confirm Kekelis and Sacks' (1992) and Preisler's (1993) findings that the type of activity in which children with visual impairments were involved was a factor in promoting play and social interaction. However, they only partially confirm Preisler's findings that more structured activities increased the opportunity of participation for the child with visual impairments. In the present study, it was observed that very structured play controlled by adults did not promote social interaction.

5.3.9.4 Social context of play

Social contexts that were characterised by inappropriate levels of scaffolding and changes in the group of children involved in a play area did not promote social interaction and play. High levels of control by adults who were preoccupied with the rules of the game and concepts involved did not foster interaction between the children. For example, the oldest blind child from the sample who was considered to have poor social skills was engaged in play which did not give him opportunities to learn how to negotiate with peers and take part in discussions with partners of equal status.

On the other hand, low levels of scaffolding meant that the difficulties experienced by some of the children with visual impairments were not recognised by adults and led to conflict between children or isolation. For

example, by following the child's lead and not recognising his difficulties in understanding what his peers were doing, an adult kept on reinforcing attention-seeking behaviours from a blind child, rather than trying to expand and develop his play and encourage him to interact with his peers.

Children with severe visual impairments also showed difficulty in identifying their peers and in following them when their peers moved out of a play area. In fact, the presence of a certain number of children who remained in a particular play area was a factor that promoted social interaction between the children. This finding is similar to what Kekelis and Sacks (1992) observed in mainstream nurseries.

It was also found that the ability of sighted children to understand the needs of children with visual impairments was another important factor which promoted social interaction. Some sighted children showed difficulty in verbalising their wishes and explaining their points of view. Other sighted children showed that they understood that the child with visual impairment needed help to find objects by taking them to a particular object, but at the same time they would try to show an object by holding it in front of the face of a blind child.

Therefore, it is important for children with visual impairments to have opportunities to interact socially with sighted children who are sensitive to their needs and have acquired a range of social skills which allow them to be able to scaffold children with visual impairments and also model their behaviours.

5.3.9.5 Play contexts and inclusion

The findings mentioned above imply that it is necessary to consider play activities and other opportunities to interact socially with peers as an essential area that needs to be planned for. Children with visual impairments cannot be solely responsible for making their own friends and engaging in meaningful play activities because their environment is not well-adapted to their needs.

Therefore, it is only when measures are taken to ensure that these children have access to both their physical and social environment and that they have had some experience of engaging in meaningful and positive interaction with others, that children with visual impairments can become effective and independent in initiating and maintaining positive interactions.

Children who experience failure in their attempts to interact with others may have more difficulty and be less encouraged to initiate and maintain social interaction with others. Therefore, play and social interaction for children with visual impairments may not take place as spontaneously as it does for sighted children.

This has implications for the successful inclusion of children with visual impairments in mainstream settings. It is important that this area of development is valued by adults working with children with visual impairments and that specialist and mainstream staff collaborate and ensure the planning and organisation of meaningful and positive play situations which encourage social participation.

To conclude, the physical and social context that children with visual impairments are exposed to determines their level of participation and play

opportunities. Adults have a great responsibility in organising the physical environment according to the needs of children with visual impairments, in selecting appropriate activities and materials and in ensuring appropriate levels of scaffolding are given to all the children to promote play and social interaction.

In summary, these findings confirm some of the findings from previous research by Kekelis and Sacks (1992), Schneekloth (1989) and (Preisler, 1993). However, they also extend our understanding of factors that promote social interaction and play and of difficulties faced by sighted children when interacting with a child with visual impairments.

5.3.10 Scaffolding

Two hypotheses from the present study referred to the difficulties that emerge when performing a task in pairs (of a child with visual impairment and a partner) and that adults are more effective in scaffolding children with visual impairments than peers.

During the sessions where children were observed working in pairs on a pre-determined task, adults adopted a much more facilitative role. However, it is also important to take into consideration that in these sessions the adults involved were teachers for the visually impaired while most play sessions were monitored or controlled by support assistants.

The two children observed in these situations reacted in very different ways. The totally blind boy complied with the requests and tried to perform the tasks while the partially sighted girl who also has diplegia rejected most of the tasks and tried to play with the materials in a different way.

In these situations, teachers provided verbal explanations about the task, encouraged the child to compare what they were building with the model given, organised the layout of objects and gave time for children to find the pieces they needed. They provided verbal information and then let the child perform the task. However, they intervened whenever they felt children needed more information. In doing so, they kept the child interested in the task and avoided failure.

However, in the case of the partially sighted girl, she refused the tasks and was more interested in pulling pieces apart than participating in the suggested tasks. The teacher still managed to complete two of the three tasks by introducing or following the child's pretend play interest (e.g. "Lets make a tower for our party") and by trying to perform the task herself but requesting help from the child.

In comparison, when children with visual impairment performed the tasks with peers, there were a number of difficulties that emerged. The amount of verbal explanation provided by sighted children was very limited. In some cases there were no verbal exchanges between the children. Sighted children also showed discrepancies in their understanding of their partners' needs. For example, they would provide sound input to help children find materials but would also refer to materials by colour when their partner was totally blind.

These findings show that in these situations, adults were much more sensitive and able to adapt to the needs of children with visual impairment than were sighted children. On the other hand, they also show that those features of social interaction between children that promote cognitive gains, as those found in previous research (Bearison, Magnazamen and Filardo 1986; Azmitia, 1988;

Mugny, Paolis and Carugati, 1984), were not a characteristic of social interaction established between children in the observed situations.

There was not an active participation of both partners. In one case this was because the sighted children were more preoccupied with completing the task than involving the child with visual impairment, and in another case this was because the child with visual impairment rejected the tasks. Children did not discuss each other's points of view and had difficulty in establishing a shared means of communication (Forman and McPhail, 1993).

This study explored the obstacles that arise during a pair activity and strategies used to maintain shared means of communication with the aim of performing a task in pairs. Previous research has shown that when sighted children interact with sensitive adults there are cognitive gains from such experience (Wood *et al.*, 1976; Rogoff, 1990). These cognitive gains were also observed when deaf children interacted with adults (Wood, 1989, in Garton, 1992). There has been no previous research looking at how adults and peers scaffold children with visual impairment in a pair activity. The findings from the present study confirm what was expected, i.e. that there are obstacles when trying to perform a task in pairs and that adults are more able to adapt and scaffold children with visual impairments. These findings bring new evidence of obstacles that emerge when children perform a task together.

These findings have implications for the education of children with visual impairments. Working in a small group situation is part of everyday life in mainstream schools. However, for a child with visual impairment to perform a task with sighted peers, it is essential that children established a shared means of communication. If they are not able to do so, adults have an important role in

scaffolding both children with and without visual impairment so that they can establish this and maintain positive interaction in a variety of activities.

5.4 Theoretical issues

The present research focuses on the processes through which children with visual impairments interact with their social partners in their real life environment, the strategies adopted by their partners and how children with visual impairments participate in these social encounters.

Socio-constructivism supports the view that in order to further our understanding of children's learning, we need to focus on children learning through interaction with more mature partners (Wood, 1988; Moll, 1990; Rogoff, 1990). The adoption of socio-constructive approaches to research children with visual impairments in their natural environments creates possibilities to expand our understanding of the quality of these children's social interaction and play. In adopting this approach, the context within which a child with visual impairments plays and learns becomes an important consideration.

Contingent interaction between children with visual impairments and their partners may be more difficult to achieve. Shared means of communication is part of the required characteristics of scaffolding and the reading of visual clues facilitates the achievement of this.

Previous research which focused on comparisons between children with and without visual impairments, looked into how individual children behaved in highly controlled situation. Such situations bear little relation to what happens

in mainstream classrooms and it becomes very difficult to transfer findings from such research into the classroom.

The findings from this research show how the quality of social interaction and play of children with visual impairments in mainstream settings depends on the combination of different factors. These factors include the physical and social context, the role played by adults and the children with visual impairment themselves. This model of social interaction has been presented in section 5.3.1. The socio-constructive approach adopted provides possibilities for understanding how language and learning are socially assembled and how they depend on the child and on the context in which social encounters take place.

From the overall findings of the present research it is possible to generate some questions for further research such as:

What importance to children's development do adults attribute to play and social interaction?

Are adults more effective in scaffolding children during pre-determined tasks with clear objectives than free play activities?

What role do adults have in promoting social interaction during other class activities?

Are adults aware of sighted children's understanding of the needs of children with visual impairments?

What role do adults play in promoting sighted children's understanding of children's with visual impairments needs?

5.5 Methodological issues

The present study accepted the wide range of conditions children with visual impairments present, their natural and complex settings and the variety of peers and adults involved. The use of qualitative data is a valuable way of gathering information on social interaction of children with visual impairments. The use of descriptions allows us to focus on play and social interaction between children with visual impairments and their partners and in doing so, to identify factors that promoted positive interaction including contextual factors.

The use of an ethnographic approach allowed the observation of children in their natural settings without recourse to tight controls, which meant that it was possible to integrate data gathered in different settings. The findings are easier to transfer to the natural settings attended by children with visual impairments, and a variety of situations are considered which reflect the complexity and variety of these children in mainstream settings.

The findings obtained have implications for educational practice and they allow us to create better learning and play opportunities for these children in mainstream settings. At a time when there is a movement to include as many children as possible in mainstream schools it is important to identify difficulties that arise in these settings and factors that promote positive experiences.

The use of a multi-method approach with some hypotheses set prior to data collection and other hypotheses emerging from the data seemed appropriate to use in order to analyse the quality of social interaction observed.

On the one hand, the hypotheses set prior to data collection gave some direction to the research by keeping a focus on some aspects that, based on previous research, seemed more relevant and interesting to analyse. On the other hand, the flexibility of using other hypotheses that emerged from the data allowed interesting aspects to be tackled and analysed further.

The fact that play sessions were filmed provided a good opportunity to go back to the data gathered and observe different aspects of the interaction. Besides, there was an attempt to observe a considerable number of children so that different contexts could be analysed. One of the disadvantages of the methodology used was the large amount of data collected and the wide range of aspects that could be analysed. This was solved by selecting aspects of social interaction that were identified as more relevant throughout the analysis.

There were some aspects that would have been interesting to include in the research design. However, these would not be very easy to put into practice. First, it would be interesting to interview adults working with the children with visual impairments. However there were some difficulties in achieving this. The fact that children were in mainstream schools spread out over considerable distances and that twenty children were involved would make this an even more time consuming task to gather all the data, as there are many adults involved with each child, including class teacher, learning support assistants and teachers for the visually impaired. It would also be time consuming for school staff and specialist teachers. These interviews could have focused on the social interaction of the observed child in mainstream settings, the value that adults attribute to play and how they saw their role in promoting social interaction. Second, it would be interesting to discuss the play sessions with these adults.

However, in face of the difficulties and obstacles observed during the play sessions, many adults could have felt these discussions to be a criticism of their teaching practices.

One possibility is that research findings from the present study can be used as part of training programmes for adults responsible for the education of children with visual impairments with the purpose of improving teaching and learning conditions.

In the future, it would be interesting to develop further case studies and include in its design the above mentioned aspects. However, it would be relevant not to consider solely those cases of blind children with no additional problems. A group of case studies which were very different in nature would probably provide richer information. Besides, research in this field has dismissed cases of children with mild visual impairments who, as the present study showed, may be facing real difficulties in interacting socially with their peers.

5.6 Limitations

The present study gathered information that has practical implications for the education of children with visual impairments. These implications are related to:

- provision of facilitative environments for all children including those with visual impairments,

- better understanding of the value of play and social interaction for children's development and the implications of visual impairment in this area,

- training needs of adults involved in the education of children with visual impairments.

There are, however, some limitations in the present study. The findings show that there is a great variety of behaviours presented by children with visual impairments and a variety of difficulties that emerge during social interaction. It is therefore not possible to conclude that children with visual impairments will have particular characteristics and difficulties and generalise them to this population. However, a strength of the present study is that it shows how children with visual impairments are engaged in such complex and varied conditions. It shows the danger of over-generalising findings and thereby stereotyping children with visual impairments.

What is possible to generalise from the present study are the contextual factors and effective strategies used by sighted children and adults which promoted play and social interaction. These strategies need, however, to be adapted to each individual child in question.

5.7 Recommendations

Learning how to interact socially with others is a demanding task for any child. Many clues that help us during social interaction with others are very subtle and depend on access to visual information, such as facial expressions. Children with visual impairments need to gain age appropriate social skills so that they can interact confidently with others. But in order to do so, they need to understand what is happening around them and how they can participate positively in a

group. Therefore, the context in which they play and learn needs to be organised in such a way that allows them to participate actively.

One factor that determines the quality of play and social interaction is the role of adults as mediators. Initially, children with visual impairments may depend heavily on adults to acquire information and to acquire and practise a repertoire of different social skills. It is important to provide information concerning what is happening around the child, but also to stimulate the child to investigate by him/herself. These children may also need more time interacting with adults in a secure environment to try these social skills before they use them to interact with equal-status peers. However, it is essential that adults are sensitive to the needs of children. Adults are very important mediators but it is by stepping back that they promote independence and give the child an opportunity to gain confidence in interacting with others.

Children with visual impairments may also need more time to learn how to use toys appropriately and this is an aspect where adults can be essential by encouraging the child to engage in different kinds of play and by stimulating continuity and complexity of a play scenario. The development of more complex forms of pretend play may not happen as spontaneously as for sighted children. Adults play a very important role in providing meaningful play opportunities.

It is also important that adults scaffold all children. Young sighted children will have difficulties in understanding the needs of the child with visual impairment and how they can communicate with them. Their attempts to initiate interaction with a child with visual impairment may fail and adults play an essential role as mediators and role models by modelling strategies that are effective.

Children's own attempts to interact with others should be rewarded and whenever necessary, adults should help the children overcome any problem that arise so that such interactions can continue. Breakdowns in communication happen when children try to interact, but they cannot solve problems that enable them to share a means of communication. To promote social interaction it is essential to observe and listen to children while they interact with others. It is through this monitoring of social interactions that adults can identify positive and negative aspects of such interactions. This allows adults to assess and plan activities that will help children acquire the necessary skills to become effective communicators and socially confident.

Often we observed that when adults tried to help children with visual impairments they concentrated on the child's activity, wishes and feelings and on providing information that would help the child. Although this is important for the child, it is also essential that we do not forget to comment on others' activities, express our own feelings, disagree with the child, etc. This will help the child to become more aware that others may feel in a different way, have different opinions and it can stimulate the child to investigate what others feel or want. It also provides an opportunity for the child to show interest in others' activities and to stimulate social interaction.

Another factor that determines the quality of play and social interaction is the context. On the one hand, the physical context needs to be organised in such a way that provides access to children with visual impairments. It is essential that the environment is structured in a way that helps the child understand how to get toys and materials and what activities are available at a certain time so that they can make choices of their own activities and participate more actively.

Resources need to be provided such as adapted games or toys so that children with visual impairments have access to them and can use them like their peers. If peers' experiences of interacting with children with visual impairments are positive, that can only foster further interaction.

On the other hand, the social context also determines the possibility of active participation of the child with visual impairments. These children depend on their social partners to have access to descriptions and clarifications regarding the play situations they are involved in. When children play within a specific group of children it is easier for them to know and identify who they are playing with. It is also important that children with visual impairments interact with familiar and socially-skilled peers. Children who get to know each other are more likely to understand one another's needs and to find strategies that reduce obstacles to social interaction. It is also important to give children with visual impairments the opportunity to choose their own friends and to ensure that they interact with others on their own initiative.

In intervention with children we should bear in mind that this aspect of children's development is of crucial importance and must be as important as academic achievement. This is important for all children but we need to be aware that for children with visual impairments there is a limitation of opportunities for these skills to develop as spontaneously as they develop in sighted children. In order to stimulate children with visual impairments to interact with their sighted peers we need to ensure that their experiences are positive.

In adopting a socio-cultural perspective in the present study it was possible to show how the complex combination of factors within the child and of contextual factors determines the quality of social interaction established between children with visual impairments and their social partners. The challenge is to create

effective learning and teaching conditions for children with visual impairments by adapting these factors to the characteristics and needs of each individual child.

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APPENDIX 1

Forms and questionnaires

CHARACTERISATION FORM

School: _____ Date: ___/___/___

Name: _____

Birth Date: ___/___/___

Sex: F ___ M ___ Gestation (n° of weeks): _____

Birth Order _____

Mother's Age _____ Mother's Occupation _____

Father's Age _____ Father's Occupation _____

Visual Impairment: _____

Visual acuity: Right eye _____ Left eye _____

Age Onset: _____

Date entry to school: ___/___/___

Regular attendance: yes___ no ___

Social adaptation: _____

Class: _____

N° of children in the class ____ Ages of classmates: _____

Observations:

_____

_____

PARENTS QUESTIONNAIRE

Child's name: _____

1. How efficient do you think your child is in the following aspects
   (Please tick the corresponding number 1. very weak; 2. weak; 3. strong; 4. very strong)

	1	2	3	4
1- in initiating conversation/interaction with others	___	___	___	___

Can you give an example:

_____

_____

2- in following rules ___ ___ ___ ___

Can you give an example:

_____

_____

3- in expressing his feelings ___ ___ ___ ___

Can you give an example:

_____

_____

4- in negotiating with others ___ ___ ___ ___

Can you give an example:

_____

_____

5- in inviting a friend to play ___ ___ ___ ___

Can you give an example:

_____

_____

6- in sharing with others ___ ___ ___ ___

Can you give an example:

_____

_____

7- in solving conflict ___ ___ ___ ___

Can you give an example:

8- in asking for help ___ ___ ___ ___

Can you give an example:

---

2. How do you consider your child in relation to the following aspects?
(Please tick 1, 2, 3 or 4 according to what is closest to your child)

	1	2	3	4	
1- talkative	___	___	___	___	quiet
2- enthusiastic	___	___	___	___	unenthusiastic
3- co-operative	___	___	___	___	uncooperative
4- generous	___	___	___	___	selfish
5- responsible	___	___	___	___	not responsible
6- adventurous	___	___	___	___	afraid
7-helpful	___	___	___	___	unhelpful
8- outgoing	___	___	___	___	shy
9- nervous	___	___	___	___	calm

Comments (please add any information you find relevant):

TEACHERS QUESTIONNAIRE

Child's name: _____ Date: ___/___/___

1. During free-play time, does the child prefer to be:

___ alone
___ with a friend
___ with a small group of friends (2 to 5 children)
___ with a large group of children (more than 5)
___ with an adult
___ other situation, please specify _____

2. Does she/he prefer:

___ to initiate interaction with others
___ wait for the others to initiate the interaction
___ either of the above
___ avoids interaction with other children
___ other situation, please specify _____

3. Who do you think are the classmates who interact the most with him/her?

_____
_____

4. Do these classmates prefer to interact with him/her in specific activities?

___ no
___ yes, which ones?
___ free play
___ classroom group activities
___ activities in the gymnasium
___ others, please specify _____
_____

5. How would you classify the child's academic achievement in the class?

- definitively below average ____
- slightly below average ____
- average ____
- slightly above average ____
- definitively above average ____

6. Does the child show difficulties in particular areas of the curriculum?

- no ____
- yes ____ Which ones?

_____

_____

Comments (if any)

_____

_____

_____

_____

APPENDIX 2

Observation framework

SECTION 1 - Level of Interaction and Play

1. *Level of Interaction*
2. *Form of Play*

SECTION 2 - Social Functions

1. *Attention*
2. *Resource*
    - *2.1 Resource sub-categories*
3. *Control of Activity*
4. *Interactive Object Use*

SECTION 3 - Descriptions

1. *Play and space features*
2. *Group*
3. *Quality of interaction*

SECTION 1

1. Level of interaction

- *Isolated*

The play activity presented by the child is independent from the activity of other children and there is no interaction between them. The activity of other children do not affect the activity of the observed child. This category is also selected if the child is alone and not playing.

- *Parallel*

The play activity presented by the child is independent but the children are involved in the same form of activity, they play next to each other but not with each other. There is no significant interaction between the children and there is no intent to influence the behaviour of the other child. When the children are not playing this category is selected if the children are next to each other and there is no significant interaction between them.

- *Co-operative*

The play activity presented by the child involves interaction with the other child or children. The children play next to each other, they talk to each other, they exchange or share toys, etc. Their play may be organised towards a certain objective which can range between pretending a situation to achieving an agreed goal and involving taking roles.

- *With adult*

The child stays next to, or is held by an adult. This category is considered when the child is neither with other children nor alone; the child is just with one or more adults.

- *Parallel with adult*

The same as the above category "Parallel" but when the adult is present as well.

- *Co-operative with adult*

The same as the above category "Co-operative" but when the adult is present as well.

- *Others*

Any other situation.

2. Form of play presented

- *Functional/Manipulative Play*

This category involves the simple use of toys (object play) in their intended purpose way (Rubin *et al*, 1983) for example, rolling a small car forwards and backwards, rolling play-dough, filling buckets with sand, etc.

- *Stereotypical Play*

Involves "...mouthing, fingering, waving and/or banging of a toy" (in Parsons, 1986b). This play is often repetitive and the actions performed by the child, although the actions performed can give enjoyment to the child, objects are not used for their intended purpose.

- *Constructive Play*

Involves the manipulation of objects viewing building or creating a model. If after building something, i.e. a car. This play usually occurs when children are playing with blocks, bricks, multilink or link-shapes, etc.

- *Pretend Play*

In this category we include all the behaviours that characterise fantasy play, imaginative play, socio-dramatic play or symbolic play. It involves the use of actions, objects, vocalisations or verbalisation in a pretend context. This context is usually indicated by verbalisation or by the production of toy noise. Therefore, it includes:

1-'verbal pretend' in which children present only verbalisation in a pretend manner (e.g. "Now I am in the seaside and I am having an ice-cream...I am going to give you one.." but no action is really involved);

2-'involvement of roles' in which children play different roles (e.g. "I am superman" or "I am the cab driver.");

3-'symbolic use of objects' in which children pretend that a certain object stands for another (e.g. a spoon can be used as a aeroplane);

4-'symbolic actions' in which children pretend to do something (e.g. chasing cars, fighting monsters, etc.);

5- a combination of any of the above.

- *Games with Rules*

Involves the "... recognition, acceptance and conformity to constraints or rules, imposed on ludic activity." (Rubin *et al*, 1983) This form of play activity implies the involvement of temporary agreement or the use of rules known by earlier generations.

- *Other play*

This category includes all other play presented by the child. The child might not present any of the forms of play above mentioned but still the observer feels that the child is playing, e.g. the child might decide to draw, paint, read a story, look at pictures, play music, art work, etc.

- Others

All the behaviours presented that cannot be included in the above mentioned categories, i.e. when the child is not playing.

SECTION 2

Social Functions

1. Attention:

- ***AT1*** *gets attention from P*

The child gets the attention of a peer. The child may move closer to peer and wait for the peer to notice his or her presence, touch the peer, call the peer, show an object or action to establish interaction, etc. To code this category the peer has to answer to attention seeking behaviour of the child within a period of 3 seconds. After getting attention from the peer, the child may go further and use peer as a resource or try to control his activity.

Examples:

C - Hi!

P - Hi!

C - Do you know what?

P - What?

C - Look!

(P looks at object or watches child actions.)

- ***AT2*** *gets attention from A*

The same as above but directed to adult.

- ***AT3*** *answers to attention seeking from P*

The child answers an attention seeking behaviour of a peer by looking at peer, answering or asking a question, nodding his/her head, etc.

Examples:

(In the home corner.)

P - Hello!

C - Do you want to cook diner with me?

P - Peter!

C - Yeah.

- ***AT4*** *answers to attention seeking from A*

The same as above but directed to adult.

- ***AT5*** *fails to get attention from P*

The child presents attention seeking behaviours as mentioned in AT1 but does not receive an answer or the peer refuses to interact with the child. Examples:

C - Peter!

C - Peter!

(P doesn't answer.)

C - Do you know what?

P - Go away.

- ***AT6*** *fails to get attention from A*

The same as above but directed to the adult.

Examples:

C - Mrs Roberts!

A - Wait, I'm going to put this in the cupboard.

- ***AT7*** *fails to answer to attention seeking from P*

The same as AT5 but when is the child who fails to answer the attention seeking behaviours of the peer.

- ***AT8*** *fails to answer to attention seeking from A*

The same as AT6 but when it is the child who fails to answer the attention seeking behaviours of the adult.

2. Resource:

- ***R1*** *uses P as resource*

The child intentionally uses a peer in order to obtain information, help or objects. The child may question where objects are, how to perform a task, when something is going to happen, who is next to the child, what the peer is doing, etc. The child may also ask the peer to give him/her an object, to separate two pieces of lego, to help with dressing or undressing, etc. For this category to be selected it is necessary that the peer answers the child's request. Therefore, whenever the peer does not answer or answers inappropriately (ex. Who

cares?) the category R5 is selected. This category is not selected if the request is an attempt to control the behaviour of the peer (ex. Do you want to build a car?). Examples:

C - Where are the blocks?
P - On the table.

C - When is my mummy coming?
P - I don't know.

C - What are you doing?
P - I'm building a house.

C - I can't do it. I can't fix it.
P - I help you.

C - I need some.
P - There you are.

- ***R2*** *uses A as resource*

The same as above but directed to adult.

- ***R3*** *is a resource to P*

The child provides information, explanations or help to peer after peer's request for it. This category is defined as category R1 but when the direction of the request is inverse, i.e. when it is the targeted child who is answering to a request from a peer.

- ***R4*** *is a resource to A*

The same as above but in relation to an adult. This category is only selected when the adult actually does not have the information he is requiring. For instance, this category is not selected when the adult asks "How many pieces do you have?" with the intention of keeping the child on the task and not really requiring information.

- ***R5*** *fails to use P as resource*

The child attempts to use a peer as a resource as in category R1 but is either ignored or receives an inappropriate answer (ex. the peer intentionally lies about the location of an object or refuses to provide the information.).

- ***R6*** *fails to use A as resource*

The same as above but from the adult.

- ***R7*** *fails to be a resource to P*

As R5 but it is the child who fails to provide information or help to a peer.

- ***R8*** *fails to be a resource to A*

The same as above but towards an adult.

2.1 Definition of Resource Sub-Categories

For the categories:

R1, R2, R5 and R6 - uses peer or adult and fails to use peer or adult as a resource. The following sub-categories were observed:

- *Identity*

The child requests information concerning the identity of a peer or adult.

ex. What's your name?

- *Location*

The child requests information concerning the localisation of people or objects.

ex. Where are the blocks?

- *Others to take action*

The child requests the peer/adult to do something for him/her.

ex. Can you open this box?

- *Get object*

The child requests objects from peer/adult.

ex. Can you find a plate?

- *Other's activity , wishes or feelings*

The child requests information concerning the activity, wishes or feelings of others.

ex. What are you doing?

- *Perform task*

The child requests information concerning how to perform a task.

ex. How do you fix this?

- *Confirmation*

The child requests information concerning the confirmation of possession of objects, performance of a task, etc.

ex. Is this my car?

- *Child's information*

The child requests information concerning him or herself, very often in the form of asking authorisation.

ex. Can I play with plasticine?

- *Other information*

The child requests any other information.

ex. What is that?

For the categories:

R3, R4, R7 and R8 - is a resource to peer or adult and fails to be a resource to peer or adult. The following sub-categories were observed:

- *Get object*

The child is requested to get an object for others.

ex. Can you get me a cup?

- *Get object that child has*

The child is requested to give object that is in his or her possession.

ex. Can you give me that ball? (Child is holding ball.)

- *Child's activity ,wishes or feelings*

The child is requested information concerning his or her own activity, wishes or feelings.

ex. Do you want this car? / What are you doing?

- *Perform task*

The child is requested to give information concerning how to perform a task.

ex. How do you open this box?

- *Location*

The child is requested to give information concerning the localisation of people or objects.

ex. Where is your doll?

- *Child do*

The child is requested to do something for others.

ex. Can you make me an aeroplane?

- *Child's play*

The child is requested to give information concerning his or her own play.

ex. Are you on holiday? / Is that your diner?

- *Child information*

The child is requested to give other information concerning him or herself.

ex. Can you see?

- *Other information*

The child is requested to give any other information.

ex. What is that?

3. Control of activity:

- ***CA1** controls P*

The child controls or influences the behaviour of a peer. The child may propose a topic of play or an action, tell the peer to stop doing something, propose to go somewhere or to do something. For this category to be selected the child has to be successful, therefore the peer has to follow the child's wishes, accept a proposal etc.

Examples:

C - Shall I be the Aladin and you are Roger?

P - Ok I'm Roger.

C - Go over there.

(Peers moves to area mentioned by child.)

C - You need to build your own castle, don't you?

P - Yeah.

- ***CA2*** *controls A*

The same as above but when C controls or influences the behaviour of an adult.

- ***CA3*** *follows P*

The child follows the control or influence of a peer when the peer controlled the child's behaviour in the same way as in category CA1.

- ***CA4*** *follows A*

The same as above but the child follows an adult.

- ***CA5*** *refuses to follow P*

The child intentionally refuses to follow a peer's attempt to control or influence his/her behaviour.

Examples:

P - Lets play Lion King.

C - No, I don't know that one.

P - Give me that saucepan.

C - It's mine.

P - Come over here.

(Child moves away.)

- ***CA6*** *refuses to follow A*

The same as above but towards an adult.

- ***CA7*** *fails to control P*

The child attempts to control or influence peer's behaviour as in category CA1 but the peer does not follow child, either because the peer refused to do so or because he was not able to do it or did not understand.

- ***CA8*** *fails to control A*

The same as above but towards an adult.

- ***CA9*** *fails to follow P*

The child attempts to follow his/her peer's attempt to control his/her behaviour but fails to do so. Examples:

P - Lets push the pushchair.

(Child tries to find pushchair to push it but does not find it.)

P - Go over there.

(Child does not move to place mentioned by peer.)

- ***CA10*** *fails to follow A*

The same as above but towards an adult.

- ***CA11*** *child is physically controlled by P*

The peer physically controls the child by taking their hands to an object, pulling them along, turning them around, etc.

- ***CA12*** *child is physically controlled by A*

The same as CA11 but when is an adult who physically controls the child.

4. Interactive object use:

- ***IOU1*** *gives object*

The child extends his/her arm towards the peer holding an object and leaves it when the peer or adult takes it.

- ***IOU2*** *accepts object*

The child extends arm to hold object given and keeps it or plays with it.

- ***IOU3*** *shows object or action*

The child extends arm towards peer or adult holding an object usually in front of the peer or shows an action (ex. "You have to kick it like this." Child kicks ball.).

- ***IOU4*** *is shown object*

The child looks or feels object that is shown by peer or adult.

- ***IOU5*** *takes object*

The child grabs an object which was possessed by the peer and takes it from him/her.

- ***IOU6*** *has object taken*

The child was in possession of an object that had been taken by the peer.

- ***IOU7*** *fails to take object*

The child attempts to take object from another but does not get it.

- ***IOU8*** *resists to have object taken*

The child resists to having an object taken away by holding it and/or moving it away from the peer who is trying to take it.

- ***IOU9*** *refuses object*

The child pushes object away or throws it away just after receiving it.

- ***IOU10*** *fails to give object*

The child tries to give object but the peer does not take it, for example when trying to give an object the child leaves it before the peer or adult is holding on to it.

- ***IOU11*** *fails to look/feel/receive object*

The child does not look, feel or hold the object that was given or shown by peer or adult.

- ***IOU12*** *fails to show object*

The child tries to show object to peer or adult but they do not have access to it.

SECTION 3

1. Play and Space Features

In this section the space where the play activity occurs is described. This includes the description of the toys that are present and how children have access to those toys, the overall space where children are, the spatial relationship between the children and the toys, etc.

2. *Group*

In this section is described the characteristics of the group of children who are playing in the same play area. This includes description of their approximate ages, sexes and proximity to child.

3. *Quality of Interaction*

In this section is described the quality of interaction between the children and the dialogue they presented. This includes level of play and dialogue complexity presented and a description of elements which seemed important to pin-point. It should also be mentioned the occurrence of misunderstandings or other problems in their interaction such as when the child gives up his objectives or does not react to a stimulus that previously was of interest. The level of co-operation must also be described as well as factors that seemed of importance to that level of interaction (e.g. input from the adult).

APPENDIX 3

Inter-observer reliability

Fleiss Nominal Scale Agreement

$$P = \frac{1}{Nn\,(n-1)} \left(\sum_{i=1} \sum_{j=1} n_{i}\, j^{2} - Nn \right)$$

$$Pe = \sum_{j=1}^{k} P_j^{\,2}$$

$$K = \frac{P - Pe}{1 - Pe}$$

$$Var\ K = \frac{2}{Nn\,(n-1)} \times \frac{\sum pj^2 - (2n-3)\ (\sum pj^2)^2 + 2(n-2) \sum pj^3}{(1 - \sum pj^2)^2}$$

$$SE = \sqrt{Var(k)}$$

$$\text{If } \frac{k}{SE} > 2 \text{ then K is significant at } p<.05$$

The first part of inter-observer reliability was achieved by analysing the observation forms of three different observers. Eleven observers also watched shorter extracts of video and the results from this inter-observer reliability is shown in part 2.

Part 1

Categories of Play - General agreement

P	Pe	K	Var (k)	SE	K/SE
0.9205	0.19	0.9019	0.0005	0.0232	38.875

Play - Agreement for individual categories of play

Category	inj^2	pj	Pj	Kj	Var (kj)	Kj/SE
1	242	0.1667	0.8747	0.8496	0.0114	7.9551
2	97	0.0663	0.8855	0.8774	0.0141	7.3917
3	192	0.125	0.9545	0.948	0.0116	8.8022
4	163	0.1042	0.9813	0.9791	0.0121	8.909
5	113	0.0777	0.8722	0.8669	0.0132	7.5317
6	200	0.1326	0.9283	0.9173	0.0115	8.6434
7	493	0.3277	0.9246	0.8878	0.0134	7.6799

Level of Interaction - General agreement

P	Pe	K	Var (k)	SE	K/SE
0.8934	0.155	0.8738	0.0001	0.01	87.38

Level of Interaction - Agreement for individual categories

Category	inj^2	pj	Pj	Kj	Var (kj)	Kj/SE
1	244	0.195	0.9245	0.9062	0.01371	7.7387
2	397	0.1333	2.8767	3.1653	0.0138	26.9387
3	359	0.297	0.8705	0.8158	0.0153	6.595
4	49	0.0385	0.943	0.9407	0.02266	6.2505
5	18	0.0136	1.0006	1.0006	0.0493	4.5092
6	36	0.0272	1.0006	1.0006	0.0286	5.9172
7	126	0.0952	1.0006	1.0007	0.0148	8.2227

Social Functions - General agreement

P	Pe	K	Var (k)	SE	K/SE
0.6281	0.0602	0.6043	0.0000762	0.0087	69.4598

Part 2

Play - General agreement

P	Pe	K	Var (k)	SE	K/SE
0.9394	0.3147	0.9116	0.00056	0.02366	38.53

Play - Agreement for individual categories

Category	inj^2	pj	Pj	Kj	Var (kj)	Kj/SE
1	6	0.0303	0	0.0312	0.0054	0.42
2	621	0.3081	0.9180	0.8815	0.0132	7.67
3	705	0.3283	0.9846	0.9771	0.0141	8.23
4	726	0.3333	1.0001	1.0001	0.0144	8.33
5						
6						
7						

Level of Interaction - General agreement

P	Pe	K	Var (k)	SE	K/SE
0.9091	0.5325	0.8056	0.0037	0.0608	13.25

Category	inj^2	pj	Pj	Kj	Var (kj)	Kj/SE
1	1389	0.6515	0.9768	0.9334	0.0448	4.41
2	3	0.0152	0.0003	0.0151	0.0067	0.18
3	605	0.3283	0.8307	0.7480	0.0141	6.30
4						
5	1	0.0051	0.0010	0.0041	0.0131	0.0358
6						
7						

APPENDIX 4

Data gathered through observation framework

	ISO1	ISO2	ISOT	PAR1	PAR2	PART	CO1	CO2	COT	AD1	AD2	ADT	PA1	PA2	PAT	CA1	CA2	CAT	IO1	IO2	IOT	FM1	FM2	FMT	ST1	ST2	STT	CN1	CN2	CNT	PR1	PR2	PRT	GR1	GR2	GRT	OP1	OP2	OPT	PO1	PO2	POT
1	0	0	0	26	17	43	62	74	136	0	1	1	0	0	0	0	0	0	0	0	0	20	44	64	0	0	0	0	0	0	67	0	67	0	0	0	0	0	0	3	46	49
2	85	49	134	2	3	5	1	4	5	2	6	8	0	0	0	0	0	0	0	28	28	12	14	26	37	12	49	0	0	0	0	0	0	0	0	0	0	0	0	41	64	105
3	22	44	66	16	23	39	0	4	4	17	15	32	35	4	39	0	0	0	0	0	0	47	20	67	9	9	18	0	0	0	0	0	0	0	0	0	0	0	0	34	61	95
4	16	32	48	62	30	92	12	25	37	0	3	3	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	73	57	130	14	20	34	0	0	0	0	0	0	2	11	13
5	11	7	18	1	1	2	0	1	1	45	24	69	31	57	88	0	0	0	2	0	2	29	26	55	0	0	0	0	24	24	0	0	0	0	0	0	16	0	16	45	40	85
6	12	9	21	44	19	63	34	51	85	0	2	2	0	7	7	0	0	0	0	2	2	48	41	89	0	5	5	0	0	0	32	0	32	0	20	20	0	13	13	10	11	21
7	27	0	27	21	0	21	37	0	37	1	87	88	0	3	3	4	0	4	0	0	0	11	9	20	4	0	4	0	0	0	52	64	116	0	0	0	12	2	14	11	15	26
8	22	17	39	50	30	80	18	40	58	0	0	0	0	2	2	0	0	0	0	1	1	0	15	15	0	0	0	90	0	90	0	73	73	0	0	0	0	0	0	0	2	2
9	0	8	8	88	17	105	2	63	65	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	88	0	88	0	88	88	0	0	0	0	0	0	2	2	4
10	10	0	10	54	85	139	25	5	30	0	0	0	0	0	0	0	0	0	1	0	1	11	1	12	0	0	0	11	89	100	51	0	51	0	0	0	5	0	5	12	0	12
11	0	0	0	3	59	62	87	31	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	90	180	0	0	0	0	0	0	0	0	0	0	0	0
12	7	2	9	35	48	83	30	39	69	0	0	0	0	0	0	0	0	0	18	1	19	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	52	85	137	35	5	40
13	77	5	82	0	3	3	3	72	75	10	3	13	0	7	7	0	0	0	0	0	0	7	0	7	0	0	0	0	0	0	2	0	2	0	74	74	60	0	60	21	16	37
14	0	0	0	0	0	0	0	0	0	0	0	0	87	89	176	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	66	84	150	0	0	0	24	6	30
15	0	0	0	27	57	84	51	30	81	0	0	0	12	3	15	0	0	0	0	0	0	51	52	103	0	0	0	0	0	0	1	2	3	30	9	39	0	10	10	8	17	25
16	15	6	21	27	42	69	33	27	60	14	14	28	1	0	1	0	0	0	0	1	1	44	10	54	2	20	22	0	36	36	11	0	11	0	0	0	0	5	5	33	19	52
17	5	37	42	23	44	67	57	4	61	5	5	10	0	0	0	0	0	0	0	0	0	3	39	42	0	0	0	0	0	0	78	45	123	0	0	0	0	0	0	9	6	15
18	87	1	88	0	14	14	2	74	76	1	0	1	0	0	0	0	0	0	0	1	1	12	1	13	0	0	0	75	0	75	3	75	78	0	0	0	0	0	0	0	14	14
19	56	0	56	0	0	0	8	0	8	24	14	38	1	65	66	1	0	1	0	11	11	21	0	21	0	0	0	0	0	0	9	6	15	0	0	0	42	54	96	18	30	48
20	4	27	31	53	41	94	33	22	55	0	0	0	0	0	0	0	0	0	0	0	0	45	0	45	0	0	0	0	0	0	29	23	52	0	0	0	0	0	0	16	67	83

Level of interaction categories:
ISO1 - Isolated session 1
ISO2 - Isolated session 2
ISOT - Isolated total
PAR1 - Parallel session 1
PAR2 - Parallel session 2
PART - Parallel total
CO1 - Co-operative session 1
CO2 - Co-operative session 2
COT - Co-operative total
AD1 - Adult session 1
AD2 - Adult session 2
ADT - Adult total
PA1 - Parallel with adult session 1
PA2 - Parallel with adult session 2
PAT - Parallel with adult total
CA1 - Co-operative with adult session 1
CA2 - Co-operative with adult session 2
CAT - Co-operative with adult total
IO1 - Interaction other session 1
IO2 - Interaction other session 2
IOT - Interaction other total

Play Categories:
FM1 - Functional/Manipulative session 1
FM2 - Functional/Manipulative session 2
FMT - Functional/Manipulative total
ST1 - Stereotypical session 1
ST2 - Stereotypical session 2
STT - Stereotypical total
CN1 - Constructive session 1
CN2 - Constructive session 2
CNT - Constructive total
PR1 - Pretend session 1
PR2 - Pretend session 2
PRT - Pretend total
GR1 - Games with rules session 1
GR2 - Games with rules session 2
GRT - Games with rules total
OP1 - Other play session 1
OP2 - Other play session 2
OPT - Other play total
PO1 - Play other session 1
PO2 - Play other session 2
POT- Play other total

Social Functions - Frequency of occurrences

Attention:

	AT1	AT2	AT3	AT4	AT5	AT6	AT7
1	2						9
2							1
3				2			
4	3		1				3
5		1					1
6	4				1		4
7	2	22			2	1	
8	1		3				
9	2	1			5		
10	1		6				10
11	1						
12	4						
13	2	3	1				
14							
15	6	2	4				
16		7			2		
17	2	1	1				1
18	7				3		
19		2					1
20	1		2				

Resource:

	R1	R2	R3	R4	R5	R6	R7	R8
1	10		2		4		1	
2				1		2		
3	2	7	1	14		2	1	3
4			2		1		4	
5		20		12		3		6
6	1		3		3		1	
7	26	2	2	22	4		2	5
8	18		1		10			
9			2		8		1	
10	4		5		2		1	
11	24		9		28			
12	16		10		4		3	
13	23	2	9	6	3		5	
14		2				4		1
15	9	3	2		11			
16	4	3	2	6	7			
17	1	1	2	1	6		1	
18	5		5	1	8		1	
19		6	1	10		2	3	
20	4		10		1			

Control of activity:

	CA1	CA2	CA3	CA4	CA5	CA6	CA7	CA8	CA9	CA10	CA11	CA12
1	28		13	1	20		9		1			
2			1	8		1	1			2		1
3			1	8		6	2		4	2	4	10
4	5		1	3	2		1					
5				28		29				7		2
6	8		2	1	1		7	1	1		4	1
7		1	4	1	3	9	1	1			1	
8	3		4	1	7		1					
9	23		2		2		8					
10	10		2		1							
11	22		5		12		4		1		5	
12	8		1		1		4					
13	9		8	5	3		1				4	
14	2		1	28	1	5	3	2		1	1	22
15	5		8	4	17		15			1	4	1
16	14			5	2		10				1	
17	13		6		5		2					
18	7		15		7		3		1			
19	8	3	2	37	3		2	7		3		11
20	6		19		3		4				1	

Interactive object use:

	IO1	IO2	IO3	IO4	IO5	IO6	IO7	IO8	IO9	IO10	IO11	IO12
1	5	11		1	2	3	1	1	2			
2											1	
3	1	1						3				1
4	3	3	1	2		1		1			2	
5	14	3			4	2	1	3				
6			5	2								
7	1	1		1	1		1				3	
8	1	4	1	2	8	3	2	2			2	
9	5				1							
10	7	5	4	3	1			1			1	
11	1	5	12	3	3	3		2	1		2	2
12		1	8	4								
13	3	7	1	3		1						
14	3	2								1		
15	1		3			4		3				
16		1			4	1	2					
17		6	3	1	1			1				
18	1	8		2								
19		1						1				
20				1								

APPENDIX 5

Field notes

Field note

Name of child: Martin

Date: 1.6.94

Observation: Child in class.

Martin was playing with water and kept on filling and emptying containers. Behind him there were some children painting on a table and some paintings were drying on a worktop behind Martin. The adult was nearby clearing up toys. Suddenly Martin filled a container with water and threw the water backwards over his shoulders. The water landed on the paintings that were drying. As a result, the adult got cross and told Martin off for throwing the water. However, Martin did not receive any information about the consequences of his action, he was not informed about where the water fell, what happened to the paintings, etc.

Field note

Name of child: Daniel

Date: 5.12.94

Observation: Child in class.

Daniel was building a model with different cardboard containers at a table where other children were engaged in the same kind of activity. A teacher was helping Daniel joining the pieces together, using the glue, etc. The teacher provided information about what Daniel was doing and what was happening to his model but she also commented on the other children's models. As a result of receiving this information, Daniel asked his peers questions about their models and asked to feel them.

Field note

Name of child: Daniel

Date: 8.12.94

Observation: Child in class.

Daniel was playing in the home corner which had turned into a hospital. Two other boys and three girls were playing in the same area. There was a teacher monitoring the play activity. The sighted boys pretended to be doctors and were taking care of dolls who needed treatment while the girls put on nurse uniforms and took care of Daniel by putting bandages around his legs and arms. After a while the teacher intervened and asked Daniel if he could be a doctor and take care of a doll that was coming to hospital. Daniel swapped roles but he wanted to be a nurse instead. The sighted girls replied that he could not be a nurse, he had to be a doctor but Daniel insisted on being a nurse and took care of the doll.

Field note

Name of child: Charles

Date: 16.1.95

Observation: Conversation with Learning Support Assistant.

After filming the first session of Charles, the Learning Support Assistant working with Charles told me that he did not play much with other children. He did not have good social skills that would allow him to do so and he was not interested in many activities. For example, he could not play with lego because of his blindness.

Field note

Name of child: Tom

Date: 16.1.95

Observation: Conversation with Learning Support Assistant.

On my arrival at the school, Tom's Learning Support Assistant told me that Tom is very well integrated in the school, that he participated in all activities and interacted well with his peers.

Field note

Name of child: Sam

Date: 10.2.95

Observation: Conversation with Learning Support Assistant.

After the play session, the Learning Support Assistant informed me that Sam had never before used the close circuit television to play a game or for leisure. He had always used the CCTV for academic work and she was very pleased that he decided to use it during play as well.

APPENDIX 6

Context

Child	S	Physical Context		Social Context		Strategies used	Comments (topic of play;language;interaction)	Play %	Int. %
		Play area	Materials Used	Adults	Peers				
Elisabeth	1	Home corner	pretend cups, plates, cloths, bed, table and chair	none	2 girls (whole session)	Children were asked to play in the home corner. Children controlled the activity.	Pretend play - school trip, picnic, ambulance. Lots of disagreement about topic of play and lots of verbal exchanges. Interactive for most of the time.	97	69
Elisabeth	2	Sand tray	sand, spades, shapes	only when children made a mess	1 girl (whole session)	Elisabeth chose to play with sand and chose a friend. Children controlled activity, adult intervened when children made a mess.	Not always playing - clearing up sand from the floor. Very interactive, verbal exchanges while playing with the sand or looking outside through the window.	49	82
Martin	1	Water tray	water, bottles, ducks, etc.	monitoring, approaching and leaving	1 boy and 1 girl (whole session)	Martin was asked to play with the water. Adult intervened to stop Martin from rocking. Adult asked peers to tell Martin what they were doing-they did it once but Martin did not show interest. Children controlled activity.	Martin kept on filling bottles and talking to himself about cars and petrol, etc. Peers talked to each other but not to Martin and Martin did not interact with his peers.	54	1
Martin	2	Carpet	wooden blocks and many other toys spread on the floor.	monitoring, approaching and leaving	non specific	Adult asked Martin not to tip over the blocks out of a bucket and asked him to tidy up. Child tried to control activity.	Lots of waving wooden blocks and putting toys away. No interaction with others, Martin was stopped from doing what he was interested in.	29	4
John	1	Carpet	musical toy, pretend hoover	monitoring, controlling turns	variable, all boys	Adult controls turns and asks children to play with the toy. Introduces new toy trying to interest John. For the rest of the time, child controlled activity.	John takes turns with peers but does not like it. He curls up on the floor while waiting. Peers try to help him following the directions from the adult. Lots of time on his own.	62	0
John	2	Carpet	shapes, truck with holes, aeroplane, etc	monitoring	variable, lots on his own	Adult asks peer to help John performing a task, introduces toys and asks John what he would like to do. Asks to tidy up.	Lots of wandering around, exploring draws and cupboards, banging the heater's door. Only played with the same toy for some seconds.	32	4
Mark	1	Carpet	building materials	none	4 boys, 2 of them for the whole session	Child chose to build and controlled activity.	Children built models and showed to each other. Pretended to fight with each other.	98	13
Mark	2	Open area	Building materials	none during activity but intervened when Mark moved away	First on his own, then the group increased up to 4 boys but it was variable.	Child chose to build and controlled activity.	Children built models and showed to each other. Pretended to fight with each other.	88	28

Child	S	Physical Context		Social Context		Strategies used	Comments (topic of play;language;interaction)	Play %	Int. %
		Play area	Materials Used	Adults	Peers				
Elena	1	Tables, variable	shapes, plasticine	controlling, keeping child on task	variable	Adult kept on asking questions to Elena to keep her concentrated on the task (how many pieces do you have? what colour is that?). Elena moved from task to task.	Interaction with the adult, dependency on adult to stay on task.	50	0
Elena	2	Table, water	duplo, water	controlling keeping child on task	variable	Adult controlled Elena's activity by asking her to perform some tasks.	Interaction with the adult, dependency on adult to stay on task.	56	1
George	1	Water, Carpet	water, road mats, cars	none	1 boy-water 2 boys-cars	George chose the activities and toys. He controlled the activity.	Interaction with peers when playing with cars, lots of imitation and toy noise.	89	38
George	2	Carpet, computer	number mats, computer	only when the children needed help	1 boy - sometimes moved away but returned	George chose the activity and tried to keep peer in the same activity by asking for help.	Interaction with peer in both activities, lots of imitation.	88	57
Daniel	1	Home corner	pretend cups, plates, metal saucepans, table, chairs, wooden spoons, cupboards, etc.	only at the end of the session	4 girls, 1 boy, variable	Daniel was asked to play in the home corner. The children controlled the activity. At the end of the session, the adult come in to the play activity.	Interaction with peers for part of the time. Pretend making cakes, having birthday parties, and dollies dying. Attempts to entry group - approaching peers, initiate conversation. Lots of requests for information from peers.	88	41
Daniel	2	Sand	sand, spades, buckets, sieves, etc. Sand pit full of objects.	1during the whole session	3 boys not far away but in different activity	Daniel was asked to play with sand. Adult followed Daniel's play without introducing any changes even when it seemed totally inapproapriate and kept on interacting with the child. Daniel controlled the activity.	Interaction with adult. Pretend situations which were only verbalised and not acted out (there is an aeroplane coming out of your leg). Topics disconnected from each other.	83	0
Anthony	1	Carpet	building materials		1 girl, at the end 2 boys joined in	Anthony chose building and controlled activity.	Limited interaction with peer which when happened was to get information about what something was or to ask for help to find something.	100	20
Anthony	2	Home corner	pretend cups, plates, boxes with conkers, saucepans, cupboards, etc.	Only when there was conflict with peer.	variable	Anthony controlled activity. When conflict occured adult intervened and asked peer to let Anthony have object. Peer moved away.	Pretend - prepar picnic and have picnic. Interaction with peer for part of the session. Lots of conflict.	98	44

Child	S	Physical Context		Social Context		Strategies used	Comments (topic of play;language;Interaction)	Play %	Int. %
		Play area	Materials Used	Adults	Peers				
Richard	1	Carpet	building materials	none	2 girls	Richard controlled activity.	Richard kept on playing, rarely interacted with peers.	98	2
Richard	2	Home corner	pretend cups, plates, saucepans, prams, telephone, etc	none	2 girls	The children were asked to play in the home corner. The chidlren controlled activity.	Pretend - preparing food, birthday party, dressing up. Richard attempted to control peers activity without much success.	98	70
Kate	1	Table	building materials, dinossaurs, stones	none	3 girls, 2 boys then 1 girl	The children were asked to play with building materials. The children controlled the activity.	Not much interaction while building. Then pretend - dinossaurs flying on aeroplanes. Some interaction and imitation.	87	28
Kate	2	Table	building materials	none	3 girls	The children were asked to play with building materials. The children controlled the activity.	Limited interaction between the children.	100	6
Kevin	1	Carpet	building materials	none	1 boy, 1 girl	The children were asked to build a house together. Children controlled the activity.	Lots of interaction between the children to get help finding pieces and to discuss how they were going to make the house.	100	97
Kevin	2	carpet	building materials	none	1 boy, 1 girl	The children were asked to build a church. Children controlled the activity.	Some interaction between the children to get help finding pieces. Imitation of models.	100	34
Louis	1	hall	books, chairs	none	2 girls	The children were asked to look at books in the hall. Children controlled activity.	Louis spent lots of time going out to pick up books. Some interaction between the children. Louis not very interested in activity.	61	33
Louis	2	table	paper, card, scissors, glue, etc.	none	2 girls, variable	The children chose and controlled the activity.	Interaction between the children, asking for help, showing what they had done.	94	43
Sam	1	table	paper, scissors	approached by the Sam	only to show what he had done	Sam chose and controlled the activity. Showed to adult who suggested some changes.	Sam was concentrated in his own activity and only interacted with peers to show the end result of his activity.	77	3
Sam	2	table	CCTV, playing cards	1 boy	only to help when asked	The children chose and controlled the activity.	Peer explained task that was new to Sam. Lots of interaction to get information from peer and lots of enthusiasm. Sam still could not see the information in the cards and did not understand the task. Initially dependent on peer, then tried to get independent.	82	80

Child	S	Physical Context		Social Context		Strategies used	Comments (topic of play;language;interaction)	Play %	Int. %
		Play area	Materials Used	Adults	Peers				
Charles	1	table	shapes	1, whole session	1 boy, 1 girl	Structured activity controlled by the adult. Controlling turns, explaining task and giving orders.	Interaction with the adult, long waiting periods. Initiation of inappropriate conversation.	71	0
Charles	2	table	shapes	1, whole session	1 boy, 1 girl	Structured activity controlled by the adult. Controlling turns, explaining task and giving orders.	Interaction with the adult, long waiting periods. Initiation of inappropriate conversation.	93	0
Tom	1	table	shapes	only to introduce task	1 boy, 2 girls	The children were asked to play a game with shapes and the rules were explained to them by an adult. The activity was controlled by the children but proposed by an adult.	The games proposed were inaccessible to Tom. He tried to play differently - pretend to make a scarecrow - this was not accepted by peers. Lots of conflict.	91	57
Tom	2	Carpet	puzzles, dominoes	none	variable	Activity controlled by the child.	The materials used were not accessible to Tom. He pretended to make farms with wooden blocks. Tom approached children and initiated interaction but children moved in and out so he did not know who he is talking to.	81	33
Nelly	1	home corner, table	pretend bowls, cups, plates, cupboards, atble, etc, plasticine, cutters	when approached by the child	variable	Activity controlled and chosen by the child. Adult asked questions about child's play when approached by the child.	Initially pretend play - mums and dads, prepar food. Nelly was the mum. Lots of conflict over objects. Language more elaborated when with adult. Lots of wandering around. Difficulty in group entry to play with plasticine - use of adult to get help.	63	37
Nelly	2	table	lego	when approached by child	3 girls, 1 boy	Activity controlled and chosen by the children.	Children built their own models and talked about what they were building and about plans for the future - organise parties, stay the night with each other, etc. Lots of verbal exchange.	79	30
Christine	1	home corner	pretend plates, cups, bowls, cupboards, bed, cloths, table and chairs	only when child approached		Activity controlled and chosen by the children.	Pretend play - mums and dads. Initially Christine was a baby then was one of the mums. Lots of verbal exchanges to agree what they wanted to play and to do.	90	63
Christine	2	Carpet	ponies, ponies' house and accessoires	only at the end	1 girl, not for the whole session	Activity controlled and chosen by the children.	Pretend play - pony drinking, having a bath, etc. Lots of individual speech.	93	4

Child	S	Physical Context		Social Context		Strategies used	Comments (topic of play;language;interaction)	Play %	Int. %
		Play area	Materials Used	Adults	Peers				
Alice	1	carpet	building materials	showed model to A.	Threw a toy back to peer.	Activity controlled and chosen by child.	Lots of play but on her own.	100	2
Alice	2	home corner	pretend plates, cups, bowls, cupboards, nurse briefcase		1 girl, 2 boys	Activity controlled and chosen by the children.	Pretend play - mums and dads, birthday and Christmas. Alice was the baby and requested all the care from her peers who assumed the role of protecting and taking care of Alice. Alice's suggestion to be a burglar was not understood.	84	82
Trevor	1	home corner	pretend plates, cups, bowls, cupboards, sofa, cloths, table and chairs	1, sometimes only monitoring	variable	Activity controlled and chosen by the child but mediated by adult who played with the child and tried to stop child from staying in the cupboard.	Some pretend play - talking on the phone, answering the door. Most of the time trying to get away and stay inside the cupboard. More interaction with adult than with peers.	80	9
Trevor	2	table	variety of textures, glue, glue stick, etc	1	1 boy for part of the session	Activity controlled by adult. Trevor was asked to make a model under the instructions given and commentary provided by the adult.	No interaction with other children although they were both making a rocket. Trevor followed adult and talked to the adult about flying his rocket. Trevor asked questions to get information about what he was feeling and the adult asked questions to get information about the child's play.	67	0
Sean	1	carpet	road mats and cars	none	1 boy	Activity controlled and chosen by the children.	Lots of toy noise. Some pretend play - going shopping and on holidays. Some verbal exchanges to agree what they were pretending.	82	37
Sean	2	home corner (also library)	cupboard, clothes, sofa, chairs, etc	none	1 boy, 2 girls	The children were asked to play in the home corner and the activity was controlled by them.	Lots of wandering around looking at covers of books. Very little interaction with others. Some pretend play - Aladin. Some disagreement with the other boy. Some verbal exchanges trying to suggest events that were refused by peers.	26	24

APPENDIX 7

Examples of transcripts and descriptions

Transcription Symbols

Capital	Upper case letters are used to indicate loudness.
Colons	Colon are used to indicate a lengthened syllable.
?	Question mark indicates the end of an utterance that had an interrogative meaning.
!	Exclamation mark indicates the end of an utterance that had an exclamatory intention.
( )	Used to indicate non-verbal behaviour.
...	Pauses are used to indicate stops.
*	Asterisks are used for individual unintelligible words.
(Utterance)	(Utterance) is used to indicate an unintelligible utterance.
" "	Inverted commas are used to indicate individual speech.

Transcripts:

Name: Elisabeth
Session n° 1

(The child is in the home corner with two other girls. The home corner has 3 pretend walls with a window and a door. All the children are by the sink.)

P1 - E...E...E...What we could do is to...
(P1 demonstrates holding plastic bowl from the pretend sink)
P1 - Ha ha ha.
E - No we couldn't, we couldn't.
(E grabs the plastic bowl from P1 and looks at it.)
E - Lets do that and get ...I want to do that and then I make you laugh.
P1 - All right.
(E turns plastic bowl upside down)
Ps - Ha ha ha.
E - No, no, not yet.
(E turns the plastic bowl upside down Ps wait)
P1 -Ha ha ha.
E - Ha ha ha.
Ps - Ha ha ha.
P2 - You put it the wrong way E.
P1 - Ha ha ha.
P1 - You put it the wrong way.
E - Yeah.
Ps - Ha ha ha.
P2 - I know E...
(P2 whispers on C's ear and puts her arm around C's neck)
P1 - Yeah.
E - YE::AH.
P2 - We have to take this out to get the lunch boxes now.
(P2 moves plastic bowl out)
P1 - Ye::ah.
E - N, no, no, we just have to take this out to get another lunch box.
(E takes plastic bowl and takes a plastic tray)

P1 - Utterance
(P2 moves to other side of the home corner)
P1 - Take it out to get another lunch box.
(E puts plastic bowl on the sink)
P2 - Drinks.
(P2 offers to P1)
P1 - Oh! Let me get something.
P1 - We are going on a school trip to Scotland.
P2 - Yeah. E we are going on a school trip to Scotland.
P1 - to the beach...to the beach
P2 - E. we are going on a school trip to Scotland.
P1 - (utterance)
E - Where is the... I'm going to get some spoons, OK?
(C looks for spoons under the sink)
P2 - Yeah.
(Peers move towards the other side of the home corner and talk to each other. E continues looking for spoons in the cupboard.)
Ps - E...Lets make a ship.
(P1 approaches C)
P1 - E what are you looking for?
E - I'm looking for spoons.
P1 - We are going to make a trip by boat...Ship I mean.
(P1 moves away from E. E approaches Ps)
E - Pretend those * spoons, spoons.
P2 - No... E help me out, we're making a ship, yeah?
E - No, pretend we're making... pretend it's tea time, we are not making a ship.
(P2 moves the table)
P2 - Yes we are.
E - No, ah... let's... ah put ah the names... ah no...
P1 - E.
Ps - We're making a ship.
(E is holding two wooden spoons while the peers move the table and chairs around. E puts one wooden spoon in front of her face)
Ps - Ha ha ha.
E - No, I'm going to put the spoons in the spoon.
(E puts spoons on the table)
P1 - E we are playing ships.
(P1 takes one spoon from C.)
(P1 gives the spoon back to C.)
(P2 shows teapot to P1)
P2 - This is my lunch box.
(P1 takes it from P2)
P1 - This is mine.
P1 - "Lunch box... lunch box."
(P2 gets another one. E moves towards the sink)
E - "Let me get my lunch box"
P2 - Here it is... box.
(P2 gives it to E. E holds given object)
E - "Put that into that..."
(E holds two objects. Ps stay around E holding objects and dressing up.)
P1 - Look what E do... she put it *
P2 - Do you know where we are going?
P2 - We're going to... to holidays aren't we?
E - No...**
Ps - Ah, Ah.
(E picks up the plastic bowl and lets P1 take it away)
E - utterance

(E puts objects through the sink)
E - utterance
E - Nhahuhm
(E tries to get the plastic bowl back)
P1 - utterance
E - "There."
(P2 moves away and is moving the chairs and table. P1 shows object to P2)
P1 - Look at my saucepan.
E - Now I'm splitting the water.
(E tips the plastic bowl over. E picks up a saucepan)
E -This is my lunch box isn't it?
P1 - Yeah.
P1 - This was my lunch box wasn't it?
(P1 picks up another saucepan. E leans over to see P1's saucepan)
E - Lets put this on this...
(E puts saucepan on cooker)
E - Come on put it on there like I...I've done.
(C points to cooker)
P1 - No we are playing ships.
P1 - Lets have a picnic.
P2 - YE::AH.
E - YE::AH.
(E picks up her saucepan)
P2 - Lets get the covers off and put them on the floor.
P2 - I've got something down in here.
(P2 looks for covers in a box)
P1 - Put in our lunch boxes then.
P2 - All right.
E - Can you put one in my lunch box?
P2 - WHAT?
P1 - Yeah.
E - Why... Why is that food down there?
(C looks at her saucepan)
P1 - I don't know.
P2 - I don't know.
P2 - (utterance)
P2 - Can I have a look in the cupboard to see if there is anymore.
P1 - Oooh, Ah, Ah.
P2 - OK, *.
P1 - Put it in my bowl please.
P2 - (utterance)
(P2 picks up cakes and puts it on C's saucepan)
P2 - There you are.
P1 - Oh, uh,uh,uh.
P2 - And... there.
(E looks at the cakes and puts her hand inside the saucepan and P2 puts one more cake in C's saucepan.)
P1 - Now we can put it in *.
E - No, no...cause we...
(E touches P1's saucepan)
P1 - No, that's my veggies.
(P1 takes her saucepan away.)
E - But... but we...
(E looks under the sink)
P2 - E. E. E.
(P2 touches C's back)
P2 - E. E. E.

(E takes a cup from the cupboard)
E - utterance
(E moves backwards looses her balance and falls down and a cake jumps out of her saucepan.)
E - Ha ha ha.
E - Can you put it back here?
(E moves saucepan towards P1)
P1 - Yeah.
(P1 puts C's cake back in C's saucepan. E puts cups on the table)
P2 - E. you fell over.
E - Oh, Ha ha ha.
E - This is my lunch box.
P2 - (utterance)
P1 - Lets make a picnic.
P2 - YEAH.
E - YE:::AH.
P1 - Put this on the floor...for the picnic, yeah?
P2- Yeah. And this goes on a car, yeah?
(E is around the table, Ps prepare the picnic, they put a material on the floor in the middle of the home corner and sit on it. E puts things on the table)
P1 - Yeah.
E - No, no, no cause I...I...we are, we were, ah... this is my blue cup and... this... that was your...
P1 to P2 - We are in a picnic.
P2 - Yeah.
P2 - E.
P1 - E. you are standing on the picnic cloth.
P1 - The picnic cloth.
(Ps sat on the picnic cloth. E looks at picnic cloth and puts her foot on it on purpose.)
Ps - Ha ha ha.
P2 - E.
E - You put it on there.
P2 - E. E. sit on it.
(E sits next to on the cloth.)
P1 - we've got...
P2 - Ha ha ha.
P2 - Sit on it.
E - I...I...I'll get some of the picnic things.
P2 - E. don't put... cross your legs.
(E stands up and picks up some objects)
P2 - Lets get the food out on the plates.
P1 - Yeah.
(E attempts to take a plate and leaves it again)
E - Cup.
P1 - No...that's it's not a cup, we are looking for food out on plates.
P2 - I'll bring some more plates.
P1 - All right.
P1 - * the shops.
(E brings a saucepan)
P1 to E - She is going to get some more.
P2 - I don't think there is any there.
P1 - There is one in here. So it doesn't matter.
E - Yeah, I want to put my food on it.
(P1 takes a plate from cupboard)
P1 - All right
(P1 gives plate to E)

P1 - There is your food plate. Off you go, where did you put your food plate?
Where did you put your food?
E - Can... can you move yours?
P2 - Here are two cups, three cups.
(P2 gives cup to P1)
P1 - Yeah.
P2 -Do you want cream?
(E gives plate with cakes to P1. P1 puts her hand up)
P1 - No, I don't **.
P2 - Here you are.
(P2 gives cup to P1)
P1 - OK.
P2 - You have that E, do you want green or blue?
E - Hum, green please.
P1 - That's my box.
P2 - Green there.
(P2 gives green cup to E)
P2 - There is your plate
P1 to P2 - Look E. drop one of her things.
(E looses her balance and puts plate and cup on the floor)
P1 - You fell over again E Ha ha ha.
E - Ooops.
Ps - Ha ha ha.
E - Where...where is...where is my other...
E - Where is my other food gone?
Ps - Ha ha ha.
(Ps put cups in front of their faces and hold them with their teeth)
P2 - That's over there.
(P2 points to show E where the food is, E picks up the food)
Ps - Ha ha ha.
(Ps hold cups with their teeth)
E - Where is the other?
P2 - Ha ha ha E. ha ha ha.
E - Come on, get some orange.
(E takes a cake from P1's plate)
P2 - Gosh.
P1 - E. That's mine.
(P1 tries to take it from E. E moves it away.)
E - Ha ha ha.
Ps - Ha ha ha.
(E puts the cake in her saucepan.)
P1 - Yeah but you are taking mine.
E - There you are.
P1 - No, but you are taking mine.
P1 - Ha ha ha.
E - I know, if we stand up and we could kneel couldn't we?
P1 - All right.
P2 - I know.
P1 - We could have a picnic like a real picnic, yeah?
P1 - Yeah.
P2 - E lets go back in the car again.
P1 - No!
E - Yeah.
P1 - No, lets not E, yeah?
E - I'm putting my food on my plate.
(E stays on the cloth. P2 touches C's back)
P2 - E. E. do you want to go in our car?

E - No, no.
P1 - It's boring.
E - Is it... is it boring?
P1 - No, it's not very boring but... you have to eat in the car and you get hot.
P2 - Yeah, it's hot.
E - I'm putting all mine back in ... and now we have to start it all over again.
P2 - Have you finish?
P2 - E. that's not food that's the cup.
P2 - Silly, Hi hi hi.
P2 - Three cups in a hand.
P1 - Oh, I need to get some more, we need to get some more.
(Ps move towards cupboard. C. stays on picnic cloth.)
P2 - Yes, yes lets pretend (utterance)
P1 - I try to find some more things.
P2 - Which colour?
(Ps come back to picnic cloth.)
P1 - Got some more food...
P2 - All right.
P1 - I've got some cups.
P2 - Who wants a yellow cup? I want... a yellow cup.
P1 - I find the plates, I find the things.
P2 - Yeah.
(P2 takes plate from C)
P2 - Who wants... who wants red?
P1 - I do.
E - Me.
P2 - There you are.
(P2 gives red cup to C)
P1 - I want red...I want green.
P2 - You want green, right, right.
P1 - I want yellow.
P2 - No, I want yellow.
P1 - Look I've got some more food.
(E gives plate to P2)
P2 - All right. Thanks.
P2 - Oh and yellow for me, yeah?
P1 - There is more food for all of us... Hum we've got lots of food.
E - This... this... this, this is to put on lap of you.
(E puts a plate on P1's lap)
P1 - We've got some...plenty of food.
E - And I've got to pretend to put tea in this one... haven't I?
P2 - I'm going to put back in the car.
P1 - We can't, you know I want to stay here.
E - I know what, I know what we can, I know what we can do.
(E stands up and picks up spoons from the table)
E - We can have some of mine... I know, we can... get the spoons.
P2 - Can I have one of them?
(E gives spoon to P2 and keeps the other one)
P1 - Can I have one of them?
E - No, no I'm having this one.
(E pushes P1's hand away)
E - We just have to make...
Ps - Ha ha ha.
E - Is that * my lunch box?
P1 - utterance
(Ps pretend to eat their food. E puts food on her plate)

P2 - That's what we don't like Iac.
P1 - Look.
P1 - Now we... we could make those things.
E - Where is mine gone?
(E looks around moving head sideways)
P2 - It's here and needs to * nice food cause it's fat...Iac.
(P2 did not understand that E was looking for her spoon, P2 picks up one of E's cakes and pretends to eat it)
P1 - Hi hi hi.
E -Ha ha ha. Iac... Iac.
P1 - Iac...Iac.
E - Where is mine? Where is mine gone? Where is mine?
(E looks for her spoon that was just next to her. Then she finds it.)
E - Oh, there is mine.
(E picks spoon up)
P1 - Can I have a go with that?
(P1 tries to get spoon from P2)
P2 - Yeah.
(P2 gives spoon to P1)
P1 - Ohm, Ohm, mohm, mohm.
(P1 pretends to eat a cake)
P2 - Ha ha ha.
E - I want some to fill up mine.
P2 - Well use the::se then.
(P2 gives a plate full to E)
E - All right.
P1 - I want a cup of tea.
Ps - Ha ha ha.
P1 - Look at this. Smashing.
P1 - I can do that, look.
P1 - Nham, Nham.
E - Ha ha ha.
P1 - Look I...I can go like this.
(P1 puts cup in her mouth)
P2 - Ha ha ha.
Ps - Um, Um, Um E.
Ps - E. E.
E - Ha ha ha.
(E continues playing without looking at Ps. P2 gives a cup to E and puts it in front of her mouth like Ps are doing)
Ps - E. E.
E - Ha ha ha.
E - No.
(E puts the cup away. P1 gives a plate to E)
E - No.
P1 - Ha ha ha.
P2 to P1 - I want to go into the bed, do you?
P2 - Do you want to go to bed?
P1 - Lets go to bed.
P2 - Yeah.
(Ps move towards bed)
E - And I will be calling the ambulance in a minute.
P1 - All right, you call the ambulance, so you *.
P2 - utterance
E - No, I'm calling the ambulance in a minute I said.
P1 - Oh yes, we are two unicorns, we're both unicorns.
(E stands up and approaches Ps)

E -No, no, no, you don't go in there, you are THE DAD, NO, no, ummmm, GET OU::T.
(C tries to pull P1 out of the bed)
E - Uhmm.....
P1 - No, I want to be in here.
P1 - E. don't pull, E. do::n't.
P1 - E. don't...E I don't want... All right E.
E - Then you go in the *... now I was giving you...
P1 - Lets ring the ambulance, quick.
E - NO, I DON'T WANT, I WANT TO.
(E pulls P1)
E - utterance
E - You can be the dad.
P1 - All right.... I'll be the ambulance lady, yeah?
E - I was packing this... all this up now.
P1 - Yeah, and I was the ambulance lady, yeah?
E - No, I was calling the ambulance.
P1 - And I was the ambulance lady, yeah?
E - Pardon?
P1 - And I was the ambulance lady, yeah?
(E never answered)

Name: Daniel
Session n° 1

(D is in the home corner together with a group of five other children. P1, P2, P3, P5 are girls, P4 is a boy. D uses a telephone.)
D - Because he has a... a... a... a... am... a... a poorly stomach ache. So I ring the doctor.
P2 - We've got to make *.
D - The doctor is coming to the home.
(D bangs on the cooker and then turns its knobs.)
D - "Turn... turn the *..."
(D feels a teddy bear that was on the cooker.)
D - "The baby..."
(P1 approaches D.)
P1 - That's the *, that's the *, that's the *.
D - What did you say?
P1 - That's the *.
D - Sitty who?... Sitty the baby?
P1 - Sitty the *.
D - Here?
P1 - Yes, but you've got to go home.
D - All right. Off you go. Nanananananananana.
(D plays with the teddy and then throws it on the floor. P1 mixes in a saucepan. D approaches P1.)
D - Why are you cooking in that p::an?
P1 - Cause we're making a birthday cake.
D - Whose is it?
P1 - utterance
D - Mine?
P1 - Yes.
D - Mrs H?
P1 - Yours.
D - This is my what?
P1 - Your birthday.
D - My... my birthday?
P1 - Yes.

(D founds a pretend camera.)
D - "I take a picture... camera."
D - "Aaah aaah aaah aaah."
D - "Quick, quick."
(D coughs to a pot and then uses a plastic teapot and a metal pot to play music.)
D - "Aaaah... that was a disco song."
(P1 passes by pushing a pram.)
D - What is that squeaking?
(D tries to follow pram but P1 is too fast for him. D finds the cooker and bangs on it.)
D - "Coocoo."
D - What is the little bear called?
D - "Stay on there for a minute."
D - "Aaaah aaah aaah"
D - "utterance"
(D bangs objects playing music again.)
D - "Aaahaaaah nanananana."
D - "I travel so far, I travel so far, I travel so far, I travel, I travel so far, I travel, I travel, I travel, I travel so far."
P2 - Do you want this?
(P2 holds biscuit in front of D but he doesn't touch it.)
P1 - Do you want to help me make a cake?
D - Yes.
P1 - Come on then.
D - Where are we going?
P1 - Go * to the table.
D - Whose the table?
P1 - Here.
P2 - Here is the table.
(P2 holds D's hand and takes him to the table.)
D - Ooh.
D - What are we going to make on it?
P1 - Sugar.
P1 - Can you just sit there and I go up there and the sugar in a minute, cause I...
D - Where? Up where?
P1 - It's over here.
(D moves hands around looking for a chair to sit while P1 moved away to pick up sugar.)
P1 - Do you want to sit down next to me?
D - Yes. What's your name? **.
P1 - Sit over here.
(D follows P1 and sits on chair.)
P1 - No, E.
D - I thought you were the big sister.
P1 - Yeah, we're pretending D.
D - Oh why is this chair *?
P1 - Oh wait. Shall I start?
D - Yeah but why is this chair bigger?
P1 - Because you have a baby * in there.
(P1 takes away a doll that was under one of the chair legs.)
P1 - Mix the sugar.
D - Let me see where is the sugar?
P1 - Here.
(P1 holds pot in front of D's face, D extends his arms looking for the pot but he feels the saucepan instead.)
D - In where?

P1 - In here.
(P1 holds pot in front of D again but this time the pot touches his face. D quickly puts his hand in the sugar pot.)
D - In there?
P1 - Yeah.
(D takes hand out of pot and passes with it on his mouth.)
P1 - Is it nice?
P1 - Do you like this?
D - I've got to stir cause... cause...
(D holds wooden spoon.)
P1 - I had it first.
D - I've got to * I've got to...
(D gets the spoon and tries to get the saucepan but P1 takes it away from D but D still stirs in it.)
P1 (to observer) - D is snatching.
P1 - You don't do that to me D. D you don't do that to me.
D - Why? You're snatching the cake now. * snatching from... you...
P1 - You snatched it from me.
D - But this is the groomer... is getting all yolky now.
(D lets P1 use the wooden spoon and P1 mixes with it. P4 approaches.)
P4 - A gift for D.
P4 - A gift for D.
P2 - No, it's my birthday... and N's.
D - Mine.
P1 - No, it's D's.
P2 - And D's.
P1 - Here you are, you can use it now.
(P1 gives spoon to D just leaving it.)
D - What?
P1 - Use it with the spoon D.
(P1 puts saucepan and spoon in front of D and the spoon touches his hand. D holds spoon and P1 moves away.)
P4 - A present for you D.
(P4 gives piece of cloth to D, putting it on his hands, D holds it.)
D - What is in it?
P4 - Nothing.
P2 - Does anybody want some food?
(D stands up and approaches peers.)
D - Aah... Can I have some food pl::ease?
(Peers talk between themselves. D bangs object on cooker. He finds a telephone.)
D - "Ring the telephone up to... she is not coming..."
(D lifts receiver.)
D - "Hello! Aah aah my, my, my, my, my, my, mum... I called Oh she is not in..."
D - "Eight, o, o, o, that's it... that's my mum's number... I go... I go, you could come... you could go... we could go to the * and you could see how *** of his chest OK, of his chest OK bye."
(D puts telephone receiver down. Peers continue talking between themselves, they are talking about babies.)
D - My baby has died.
(D moves towards P3.)
P3 - Your baby's died?
D - Yeah. What's your name?
P3 - What's in there?
D - What's your name anyway?
P3 - N.

D - My baby is not here anymore, she's died.
P3 - Oh poor baby.
D - "I'm mmmm Aah aah aah."
D - "I'm going to get some food."
D - "Whose windows is these?"
(D feels the window.)
D - utterance
(D bangs saucepans playing music with it and then plays with the camera.)
D - "To make a **"
D - utterance
(D touches P2.)
D - What's your name?
P2 - E.
(D touches table and plate.)
D - Can I have some tea? What's in there?
P5 - Nothing at the moment D.
D - What's your name?
P5 - C.
(D touches two plates.)
D - "Oh, ** two more, two more, two more... TWO MORE."
(D approaches other children who talk between them.)
D - Too much many wh::at?
D - "My baby is going to * two MORE."
(D kneels by the table and touches the plates.)
D - "Aaah aah aah aah."
D - "Aaah I can't, I've got to get the food ready now."
(D explores cupboard and carpet.)
D - "What that *?"
D - Where is J gone? Where is J gone? Where is J gone?
Observer - I'm here D, I'm just watching you.
D - I've got to get my mummy ready now.
Observer - OK.
D - "Oh the fax... the fax."
(D finds a doll and approaches peers.)
D - There is my little baby. It wasn't died. It wasn't died. My baby is back now. My little lolly dolly is back now.
P3 - Oh that's my dolly.
D - She is back now.
P3 - Oh, that's ni::ce.
D - She didn't... your, your dolly... she... your dolly was dead once and now he was dead.
P3 (to P2) - A cup of tea.
P3 - I'm called J.
P2 - And I'm called L.
P5 - No, I'm called E.
P3 - C you call me J and when I changed my name you can call me, you can call me L or the others.
(D stopped and listens to peers.)
P5 - I'm changing name too.
P2 - I know, we can make * for *.
P2 - I'm called... I'm called S L.
D - I'm called, I'm called daddy... N.
P3 - That's nice. You can be called that.
D - Your baby is dead now N.
D - Your baby is dead now N.
P3 - My dolly is already back.
D - He is dead.

P3 - She is dead now?
D - Yeah.
P3 - Oh! Poor dolly.
P2 - The party is not ready yet.
D - Oooh.
D - The cake's... the cake's...
T - Right, we just have some minutes left and then is clearing up time...*.
(D touches window and pipe. P3 gives a hug to D.)
D - What's your name?
P3 - N.
D - Your dolly is back now.
P3 - She is dead still.
D - Oh no she isn't.
P3 - Yes she is.
T - Is there a party?
D - No you can't, you're not allowed, you're not allowed to come.
P3 - Yes you can.
T - Can I? Can I have a cup of tea?
D - N::o.
T - Oh dear! **.
T - OK.
T - utterance
D - You could... you could have some *.
T - Oh lovely! Where is the *?
P2 - It's not ready yet.
T - It's not ready yet?
T - utterance
P2 - Do you want to have a cup of tea?
T - Oh! I would love a cup of tea.

Name: Charles
Session n° 2

(C, an adult, a boy-P1 and a girl-P2 are sit at a table and play a game with shapes. The game consists in making a line with shapes but from one shape to the next only one difference is allowed and the children take turns.)
A - But it's only allowed only one difference. It has to be... Right, but... C... C, C has chosen a rectangle...
C - Yeap.
A - Now, it is the same thickness...
(A gives shape chosen by P1 to C and also the shape that was on the table.)
A - OK?
C - Hum hum.
A - And... but is the same...
C - Shape.
A - So, is that one difference?
C - Yes.
A - It is C you're right. There is only one difference between them. And that is the... shape.
(A takes shapes from C.)
A - Follow on them C by putting next to each other OK?
(A puts shapes on table in front of peers, then puts both shapes in front of C and he feels them.)
C - Yeah.
P1 - We're playing... dominoes?
A - Like dominoes, yes. They follow on.

(A takes shapes from C and puts them in the middle of the table.)
A - Right C it is your turn, so you...
(C pulls box with shapes towards himself.)
A - Listen! He's got the rectangle. It's quite thick... so you have got to choose a shape that has got only one difference.
(C feels shapes.)
C - Toooo... totito...
A - What shapes are you going to choose?
C - I'm going to cho::ose, aah aah.
C - You have to watch me carefully. You've got to watch me. You've got to watch me care::fu::ly. Aaahhbaba oh aahaaahaah.
A - Rectangle... and it's thick...
P1 - And a square.
A - No. He has to follow on from a rectangle hasn't he? He's got **.
(C puts shape on table, A takes shape and puts it in C's hand.)
C - Oh there it is.
A - What shape have you chosen?
C - Ah a square.
A - And is it quite thick or thin?
C - Yes.
A - What?
C - Quite thick.
A - Feel it.
(A controls C's hand movement around the shape.)
C - Quite thin.
A - Right. So, it's a square. That's one difference. And is also....
C - Quite thin.
A - And it's thin. So, that's two differences. How many differences did I say you were allowed?
C - Three.
A - No. How many differences are you allowed?
C - One.
A - And that's got how many differences?
C - Two.
A - So, you have to put that one away and find another shape.
C - I choose a...
A - Concentrate on what you're doing C. It's allowed one difference.
C - One difference.
A - So, it's allowed a different... shape, the same thickness.
C - Ah Ah. I've got a different shape.
(C gives shape to A.)
(A makes C feel the shape.)
A - Ah right, OK.
A - What shape is it?
C - A rectangle.
A - A rectangle.
A - Is it thick? The same as...
(A shows previous shape to C.)
C - Yeah.
A - What's different about it?
(A makes C feel both shapes.)
P1 - Is much more smaller.
A - Ssshh I don't want you to tell me.
C - Is much more smaller.
A - That's it. So, how many differences then?
C - One, two.
A - One.
C - One difference.

A - Because it's...
C - Because it's much more smaller than this one.
A - Right, so...
(A takes shape from C and puts the line of shapes in front of C.)
A - Now, follow it up, follow it on, follow it on.
(C holds A's hand and tries to direct it.)
C - Now I want you to choose...
A - No, no, no, no, no. It's L's turn.
(A puts shapes in the middle of the table. C touches box and pushes it forwards.)
C - Now it's your turn L.
A - Give it to L.
C - Your turn L. But don't mind to * them up.
(C gives bag to L.)
A - No, no, it's OK.
(P2 takes shape from box.)
A - Now L put that down.
(P2 puts shape on table in line with the others.)
A - Right. Now, L have put down... next to the small but thick rectangle... she has put down...
(A takes rectangle to C's hand while she speaks about it and then the shape that P2 put down.)
C - A hexagon.
A - Right. Now, how is that different?
C - Well, it's... it's thinner.
(C holds hexagon.)
A - Is it? It's the same thickness but how is it different?
C - It's got one shape.
A - It's a different...
C - It's a different shape.
A - Also there is something else about it.
P1 - I know.
C - It's got...
(A puts index finger in the air to P1 like telling him to wait.)
A - No... it's also something else different about it. What else? That's one difference. Is that shape? No, it's a different shape but also what else is different by feeling the two shapes in the hand.
(A puts one shape in each of C's hand.)
C - That one is bigger.
A - Which one is bigger?
C - The hexagon.
A - Right. So, how many differences in what you've done? I asked for one difference.
(P2 shows 2 fingers to A.)
A - Two. So we have to put that one and choose another one.
C - I choose it.
A - No, it's L's turn.
C - I put the hexagon back.
A - Think L, one difference.
C - One difference, not two differences.
A - utterance
A - If you put a triangle down. She has put a large triangle down and it's thinner, it's a thin shape.
(A holds shape in the air to show it to peers.)
A - How many differences would that be? Bigger...
C - Wrong.
A - Different shape and... it's...
A - So, how many differences do you've got?

P2 - *.
A - How many are you allowed?
P2 - One.
(A talks to P2 who tries to find another shape. C touches microphone.)
C - "Uh uh uh uh ah_____"
A - Right, so L put down... C.
A - Small circle next to the small rectangle, OK?
(A gives circle and rectangle to C.)
(A makes C feel around it.)
A - So all that she's changed, now is...
C - Different.
A - Shape. So, she's put the same thickness down... and the same... one is small...
C - We can make a *.
A - Next to the small rectangle but it's a different shape. So, it's just one difference, OK?
A - Right. It's D' turn.
(A puts shapes on the table.)
A - D, D has got to choose a shape that goes next to the small circle... which is...
(A puts C's hand on table.)
A - Right. Right, OK.
C - Mrs K.
A - Now C he's got a small square... which is thick or thin?
(A gives shape to C.)
(A makes C touch around it.)
C - Thin.
A - Have a feel.
C - No, thick.
A - Is it small?
C - Yeah.
A - So, how many differences is that C?
C - Two.
A - How many differences is that D?
C - Two... two... two, two, two.
A - No. Tell me...
C - One.
A - One. The only a difference. What, what is the difference between the two?
P1 - Aaahh. That one is not thick... that bit has the same as this bit.
(P1 points to shape.)
A - Why? It's called a different...
P1 - Size.
A - N::o (utterance)
C - Shape, shape.
A - Thank you C.
A - It's a different shape D, isn't it? One is a circle, one is a...
(A points to circle and then to square.)
C - Shape.
P1 - Square.
A - Right. So C, you have a small square... small square.
(C puts his hands in the box with shapes, A takes his left hand out and makes him feel the square.)
A - And it's...
C - The shape.
A - What is it? Thick or thin?
C - Thicker.
A - Right. So... one difference C.

(A puts square on the table.)
C - I'm going to get...
A - *.
C - I'm going to get.
(C feels shapes in the box and brings one out.)
C - Oh no!
A - Right. What have you chosen C?
C - A small hexagon.
A - Good boy. And it is thick or thin?
C - Thick.
A - Good boy. That is one difference. Well done C.
C - *.
A - (utterance) Lets get another shape next to yours **.
P1 - Oh no! This is getting harder.
A - Right L what have you chosen?
P2 - A triangle.
A - Right. So that's one difference because it's a different...
(A holds triangle in the air.)
P2 - Shape.
C - Shape.
A - Is it the same thickness?
P1 - Yes.
P2 - Yes.
A - Is it small or big? Small or big?
(A gives shape to C.)
C - Small.
A - So, it's only one difference.
(A takes shape from C and puts it on the table.)
C - Yeah.
A - Well done L. D's turn.
A - He has got to find a shape to go with the small triangle that is quite thick. What could you choose D?
C - Hum humm.
A - Think about that one D *.
A - Right he has chosen a lar::ge triangle... so, it's the same shape, OK? What is the difference about it?
C - Got two differences.
A - C have a feel.
(A gives both shapes to C.)
C - It's got two...
A - Don't you tell me. Don't you tell me. Let D tell me.
P1 - That one is the smallest and that is the biggest.
(P1 points to shapes that C is holding.)
A - Right, so that's one difference.
C - Two differences.
A - What about thickness? Are they both the same?
C - No.
P1 - Yes.
A - Yes, they are. Have a feel... have a feel C.
P1 - And they've got the same...
C - Oh dear!
A - The same shape, the only difference if that one... is...
P1 - bigger.
A - Good boy D. Right C, you have to find a shape...
(A takes shapes from C and puts them on the table.)
C - That's two differences.
A - that goes next to the triangle.
A - Right? So, you've got a large shape and is what thick or thin?

(A gives shapes to C's hand.)
(A makes C feel it.)
C - Thick... thin... thick.
A - It's thick.
A - A large triangle that is thick.
C - All right. I've got one.
(C takes shape out of box.)
A - What have you chosen?
(C gives shape to A.)
C - A circle.
A - Right. So how many differences?
(A gives circle and triangle to C, one in each hand.)
A - All right, what is the first difference?
A - You have chosen a circle so it's a different...
C - Shape.
A - One difference. What else is different?
C - That one is bigger.
(C shakes one hand.)
A - How is it bigger?
C - Well, because, because... the circle is litt::ler.
A - No, they are the same size.
C - They are the same but... but... but the triangle...
A - Is what?
C - Is thicker than the circle.
A - Right. So, how many differences is that then?
C - Two differences.
A - Right. So we are allowed one difference, so we have to put that one back.
(C looks for another shape in the box.)
C - Now... I'm going to cho::ose ihihahihihuhuh_____.
A - C think about (utterance)
C - Oh no!
A - Have you really thought about that?
C - Uuuh. No.
A - No. Have a think. You've got a large... shape, thick and is a triangle.
C - Eeeh.
(C takes shape out of box.)
A - What is that one?
C - Hexagon.
A - Right. What shape... what is the difference?
C - It's little.
A - Right. That's one difference. What else is different? You have a triangle down there.
C - And it's thick.
A - It's what?
P1 - I know.
C - Thin.
A - That's two differences. What else is difference? You have a large triangle on the table.
C - It's small.
A - That's three differences. So, that's no good to me. Put that back in the box **.
C - Oh no! Phrrrr.
A - Come on. D knows ** in the box and he knows which one.
(C looks for shape in the box.)
A - Can you think C what is on the table and * give me a shape that has only one difference.
C - Here it is.

(C takes shape out of the box.)
A - What shape are you giving me now?
C - A square **.
A - Right. Is that right D?
(A holds shape in the air.)
C - Mmmyy.
P1 - Ahhh ahhh.
A - Tell C why isn't right?
(C touches shapes in box.)
P1 - Because it's thinner and this is much more *
(P1 points to shapes.)
A - That's one difference but also...
P1 - That one is... that one... is... the little one.
A - No. It's a large shape but what is different?
P1 - It's thin.
A - Yes. That's one difference. One is thin and one is thick. But what's the other difference? What is it that I'm holding?
P1 - Square.
A - And what's down on the table?
P1 - Triangle.
(C yawns.)
A - So, that's another difference. So it's wrong C. You need to think.
(A puts shape back in the box.)
A - You've got the triangle, large...
(C takes shape out of the box.)
C - What am I holding?
A - You tell me.
C - A triangle.
A - Right. Is it large or small?
C - Small.
A - No, it's the same size.
C - Large.
(A brings triangle that is on table to C.)
A - If you put it on top... if you put them together. Both touching the table. Feel around, same size, OK? Right. What's the difference?
(A holds C's hands and makes him feel the shapes.)
C - *.
(C rubs one shape on the other.)
A - utterance
P1 - I know.
A - Hold on D. He needs to answer. C could you * properly cause you're holding... anyone else to play the game.
C - That one is thicker.
A - Right, and this one is...
C - And this one is thinner.
A - Right. So, that's one difference. Are they the same shape?
C - N::o.
A - What's this one that you're holding?
(A touches C's left hand.)
C - Yes.
A - What's this one that you're holding?
(A touches C's left hand.)
C - A triangle.
A - What's this one then?
(A touches C's right hand.)
C - A triangle.
A - So there is only one difference. Good boy.
A - Right. L's turn.

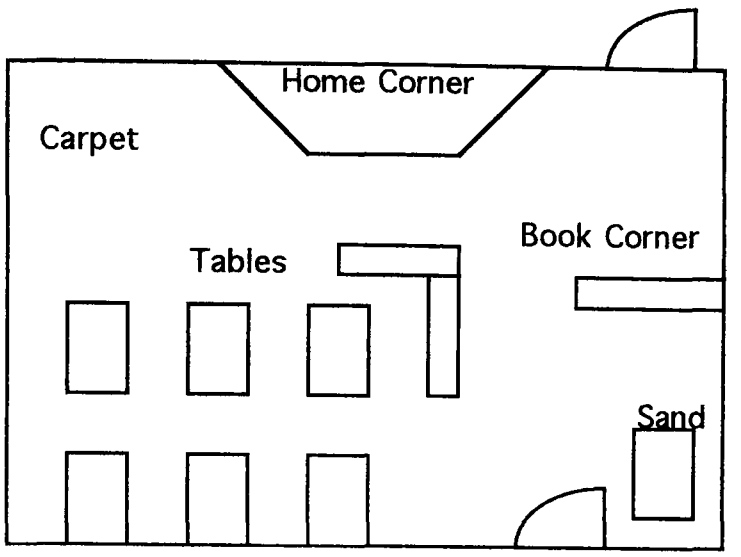
(A takes shape from C and puts it on the table.)
A - So she's got your thin triangle, large... see if she can find one. What do you think you're going to *?
P1 - I know.
A - I know. Hum, lets see what L chooses.
(P2 takes shape out of box.)
A - Right. So L has put down what shape?
(A gives shape to C.)
(A makes C feel it.)
C - A hexagon.
A - Right. Next to the...
(A puts shape on the table.)
C - Triangle.
A - So, that's not a difference, is it? What is the difference?
A - Are they both large shapes?
P2 - Yeah.
A - So what is the difference?
A - You've got a thin triangle... and a thin hexagon. What's the difference?
(C yawns.)
A . Have a look. So what's the difference between them?
(C moves hands forwards along the table. A moves C's hands away so that he doesn't move the line of shapes that are on the table.)
A - Thin triangle.
C - I'm going to be *.
A - Can you sit up please.
(C sits up.)
C - I know what I'm going to be *.
A - So C, you tell me what is the difference then. She's got a thin large triangle and a thin large shape but a hexagon. What's the difference?
C - Well... the hex...
A - She's got a thin... large triangle and she's got the thick... thin large hexagon. What's the difference? There is one difference between those. What is it?
P1 - I know.
A - D.
P1 - The... that's a different shape.
A - Good boy. That's a different shape L. Look, one is a triangle, one is a...
(A points to shapes.)
C - Hexagon.
A - Right. D your turn.
C - Hexagon.... hexagon.
(P1 puts shape next to the others.)
A - Good boy. What's the difference D?
P1 - Aaahh, that one is a different shape *.
A - Good boy. D has put down next to the thin large hexagon, has put down a thin...
(A gives shape to C.)
C - Large triangle.
A - Feel it.
C - Rectangle.
A - No, feel it properly.
C - Square.
A - Square. All the sides are the same...
C - Shape... not shape.
A - The same...
C - Length.

A - Thank you. So you've got to find a shape in the box to go next to this one.
(A gives box to C and takes square and puts it on the table.)
C - "Mamama_____."
A - ** a large square, thin...
C - Thin.
P1 - Large.
A - What shape are you going to choose? Think about it C.
C - I've got to choose.
P1 - I know what I **. I tell you L.
A - Come on (utterance)
C - I know what I'm going to choose.
A - Right. What have you chosen?
(A holds C's hand and makes him feel shape.)
C - A circle.
A - And what is the circle? Small or large?
C - Large.
A - Good. So, that's not a difference. Is it thick or thin?
C - Thick... thin.
A - Thin. So what is the difference?
C - Yes.
A - What do you put next to? The thin...
(A gives shape to C.)
(A makes C feel then lets him hold it.)
C - Triangle.
A - No, this one.
C - The thin square.
A - So what's the difference?
C - Yes.
A - What's different? They are both the same...
C - They are both the same shape.
A - No, they are both...
C - The same...
A - Thin.
C - Thin.
A - They are both thin shapes (utterance) There is one difference. What's the difference?

Descriptions:

Elisabeth

Classroom layout:



Session n° 1

Play and Space features:

Elisabeth played in the home corner during the entire session. The home corner was limited by three wooden walls with a door and windows and a real wall. Inside the home corner there was a children's size cooker, sink, cupboard, bed, table and chairs all children size. Inside the cupboards there was kitchenware, and some cloths and clothes. All the furniture was against the walls with some free space in the middle.

Group:

The group of children remained always the same throughout the session. Two girls about the same age as Elisabeth played in the home corner with her.

Quality of interaction:

The children chose to play in the home corner and the adult left. Initially, the children laughed at turning a plastic bowl upside down. Then, while Elisabeth looked for some spoons, her peers talked between them and suggested making a ship. They tried to agree on a topic of play but throughout the session Elisabeth tried to influence her peers to play according to her proposals while the peers tried to get Elisabeth to play according to their proposals.

Elisabeth did not want peers to make a ship and tried to avoid and ignore it by talking about something else or by trying to propose something different despite difficulty in expressing what she wanted.

Very often she refused to follow peers in their proposals and she tried to regulate peers' activity even when she either did not know what she wanted or couldn't express it. She showed a lot of verbal disagreements. Sometimes she would not finish her proposals, e.g. when peers were trying to agree that the cloth was where they were having the picnic and the table was the car, Elisabeth disagreed and said "No, no, no cause I... I... we are, we were, ah... this is my blue cup... and... this... that was your...".

Other times, Elisabeth proposed something which peers refused to follow and Elisabeth had difficulty in trying again, in finding a good enough motive to convince her peers. For example when her peer asked Elisabeth to help her make a ship she refused saying:

E - No, pretend we're making... pretend it's tea time, we are not making a ship.

P2 - Yes we are.

E - No, ah... let's... ah put ah the names... ah no...

P1 - E.

Ps - We're making a ship.

(E puts a spoon in front of her face and peers laugh at her.)

For almost all the session the children did not engage in adopting different roles. They pretended to be themselves but in a pretend situation, going on a trip to Scotland, ships, having a picnic and only in the end of the session was there an attempt to play different roles when one peer wanted to be the ambulance lady while Elisabeth insisted that her peer should be dad. These different topics were sometimes interrupted by the need to pick up more objects, by children imitating each other making noises with cups in their mouths, etc.

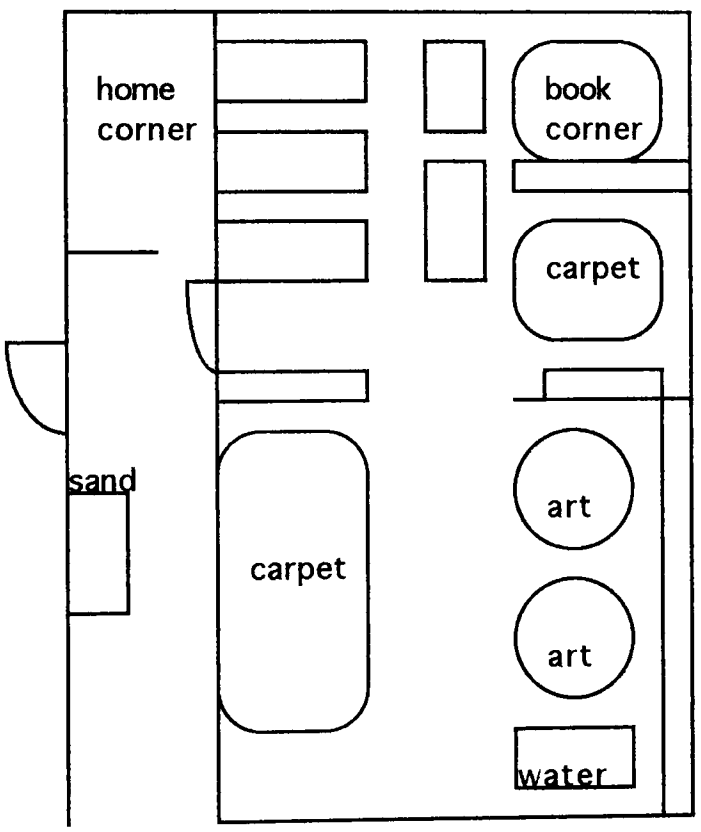
There were some situations when Elisabeth did not participate actively with the other children, for instance when they were making the ship and when they imitated each other making noises with cups in their mouths. However, when the peers called her to show her what they were doing Elisabeth would laugh without looking at them.

At the end of the session there was more conflict when the two peers went to bed and Elisabeth wanted one of them to be the dad. Elisabeth proposed that she was

calling an ambulance and she pulled one peer out of the bed, the peer resisted for a while but then gave up. The peer then wanted to call the ambulance which Elisabeth also opposed. Then the peer suggested being the ambulance lady. There was confusion about being the ambulance lady and calling the ambulance. Elisabeth did not understand that the peer wanted to be the ambulance lady and insisted that she herself was calling the ambulance. The peer carried on asking if she could be the ambulance lady but Elisabeth never answered the peer and ignored the question.

Daniel

Classroom layout:



Session n° 2

Play and Space features:

Daniel played with sand during the whole session. The sand tray was against a wall in the corridor next to the classroom. In the sand tray there were buckets, spades, pretend cars, tractors, lorries, etc. The sand tray was very full of toys.

Group:

There were three other boys playing with sand. However, there was also an adult behind Daniel while the boys were on the other side of the sand tray. Daniel kept on playing a completely different way to the other boys and he turned his back to the other children in order to turn his face to the adult.

Quality of Interaction:

Although there were three other children playing with sand, there was no interaction between D and the other children. Only once did Daniel ask his peers what was making a sizzling noise and they tried to show him a bucket but they failed to make Daniel feel it. Also the form of play presented by Daniel was quite different from that of his peers. Daniel's peers were sometimes playing together filling and emptying buckets, burying objects, etc.

Daniel's play was characterised by a dialogue with the adult pretending different situations and moving from one topic to another. While doing this he sometimes touched different objects and used them in a repetitive and unrelated way to what his pretend play was about. Once he pushed a car forwards and backwards (pretending to be a Volkswagen car that needed to be repaired) and moved a spade from side to side (pretending to make a new concrete ground). Daniel would touch an object in the sand tray and talk about it or pretend that it was something else but he did not try to show the objects to the adult. Daniel presented behaviours such as shaking his hands and head.

The adult stayed behind Daniel and would not interact with Daniel unless solicited by the child. Daniel kept on seeking the adult's attention by introducing topics or returning to a previous topic. The adult would answer frequently in a neutral manner, such as "OK", "Good", "Oh that's nice. I like that.", etc. Sometimes the adult asked questions to keep the interaction, such as: D - A new truck. A - Is it a big one?.

During the entire session there was no attempt by the adult to extend, initiate or finish a topic. For example, when Daniel said that there was a snow pusher the adult answered 'that will be useful when it snows', then Daniel said 'when it melts we'll push the snow' and the adult answered 'That's a good idea.'.

Sometimes the adult asked a question that could maintain the interaction but Daniel did not answer. For example, when talking about a truck the adult asked

'Shall I take you for a ride in a minute?' and 'Where do you want to go?' but Daniel did not answer, instead he started a new topic - snow pusher.

Daniel's topics moved from flowers to trucks, to snow pushers, then to Volkswagen cars, to concrete grounds, to lrlrlr (that he defined as sticking stuff), to noises, went back to Volkswagen cars, vans, glass in the sand tray, back to lrlrlr that comes out of the adult's leg, to real aeroplanes that also come out of the adult's leg, to the fact that the adult was in the sand tray making a loud noise and finally to a sizzling noise that his peers were actually making.

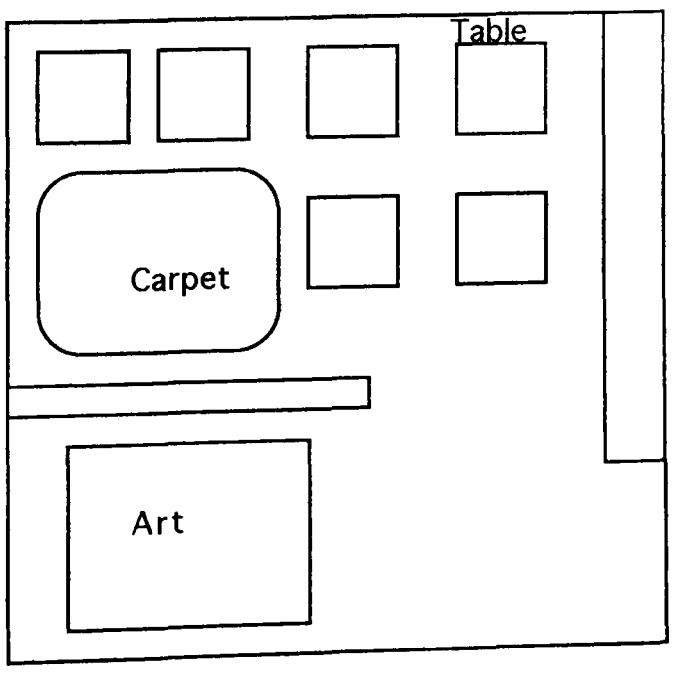
When Daniel asked the adult what was that sizzling noise that he could hear, the adult answered in a pretend context - 'Perhaps it is some sausages sizzling for your diner.' Daniel then turned to his peers and asked them about the noise and he realised that it was the sand. Then Daniel told the adult that they were not sausages but sand and the adult replied 'All right.'.

There was some confusion when Daniel said that the adult was in the sand tray and the adult replied 'What is she doing there?'. Daniel explained 'It's YOU in the sand tray.'.

From the beginning to the end of this session Daniel presented more and more behaviours such as rocking his head and shaking his hands.

Charles

Classroom layout:



Session n° 1

Play and Space features:

Charles played at a table. On the table there was a bag with shapes.

Group:

Charles played with another boy (P1), a girl (P2) and an adult for the entire session.

Quality of Interaction:

The children played a game with rules. The children had to take turns and try to find a shape that another child would ask them to find. After they found the shape, the adult would ask questions about it. Charles' peers also had to write about and draw the shapes.

The whole session was controlled by the adult who said to the children what they had to do and asked questions to check what the children knew about the shapes. The adult also controlled Charles' posture by putting his hands on the table and lifting his head up.

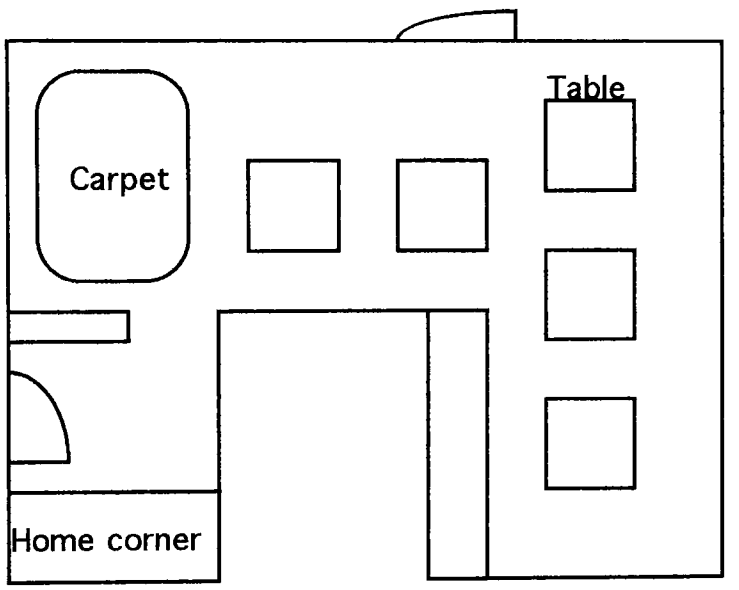
Charles' interaction with the other children was minimal, he passed the bag to his peers when asked by the adult to do so and he asked his peers to find shapes. While Charles' peers were trying to find a shape Charles would have to wait for a considerable time as his peers sometimes had difficulty in finding the shapes and giving the right answer. Charles yawned several times.

Once, Charles put one hand on his head and with the other hand he touched the bag that was in the middle of the table while he was waiting for the other children to have their turn. The adult took his hand from his head and from the bag and put them on the table. Another time, Charles found a pencil and piece of paper on the table and asked if he could write there. The adult said 'No' and took the pencil and paper away from him. Charles also presented some individual speech while he was waiting for the others.

P1 helped Charles once when he was having difficulty to find the top of the bag to put a shape back in. The adult gave shapes to Charles so that he could identify the shapes that the other children found and were talking about. This gave Charles the opportunity to check if his peers found the correct shape. When Charles was having difficulty the adult would ask the question again and hold Charles' hands to make him feel the shape.

Tom

Classroom layout:



Session n° 1

Play and Space features:

Tom played at a table. There were two boxes on the table and different shapes.

Group:

Tom played with another boy and two girls for the whole session.

Quality of Interaction:

The children were playing with the shapes trying to fill the bottom of one of the boxes with them, therefore, they had to make the shapes fit into each other in order to cover the bottom of the box. The play had been proposed by an adult who was no longer present.

Tom tended to have his hands inside the box to feel the shapes and gaps. His peers did not provide much verbal information about what they were doing and sometimes they made reference to the colours of the shapes to explain where they should go. For example, 'Is there... and that goes there... Ha ha ha.'.

One of the girls (P2) controlled most of the session by telling the other children what they had to do 'Put it down.'; 'YOU CAN'T MAKE A SCARECROW.', by criticising 'We've done it wrong.' and by complaining to the adult.

Tom tried to get information about what was happening around. For example, when the girls started talking about the game, T asked '... two girls are fighting aren't they?'

For most of the session Tom was not playing the same game as his peers. After a conflict with his peers Tom said 'I'm playing on my own actually'. When he tried to join in, he put his hands inside the box to feel the gaps and sometimes this generated conflict with his peers.

He tried then to pretend to make a scarecrow by putting shapes next to each other. This was not what the adult proposed earlier to the children and Tom's peers did not accept it. However, Tom insisted that he had wanted to make one and that he needed to. This created conflict between the children and it ended up in hostility with Tom calling his peers 'nasty' and his peers calling him 'silly boy Tom'.

Tom tried to get support from the other boy who was the only one who understood that Tom was pretending but he did not support him because although he understood Tom, he answered 'We're not supposed to make a scarecrow'. Tom tried to get the adult's attention but he was asked to wait. Tom then tried to make a house but again, his peers did not accept it.

Later, the adult approached the children with another box of shapes and suggested another game. Now the children had a layer of big shapes filling the bottom of a box. The children were asked to take a small shape from another box and put it on top of a similar shape that was filling the bottom of the box.

The adult let Tom feel the small shapes and took a big shape out of the bottom of the box so that Tom could feel them and see if they matched. The children had to take turns. Tom did not match the shapes, he would take a small shape out of the box and put it on top of any big shape. The shapes also slid away and he tended to put them all in one of the corners of the box.

APPENDIX 8

Conflict situations

Situation n° 1
P1 - We are going to make a trip by boat...Ship I mean.
(P1 moves away from E. E approaches Ps)
E - Pretend those * spoons, spoons.
P2 - No... E help me out, we're making a ship, yeah?
E - No, pretend we're making... pretend it's tea time, we are not making a ship.
(P2 moves the table)
P2 - Yes we are.
E - No, ah... let's... ah put ah the names... ah no...
P1 - E.
Ps - We're making a ship.

Situation n° 2
P2 - E lets go back in the car again.
P1 - No!
E - Yeah.
P1 - No, lets not E, yeah?
E - I'm putting my food on my plate.
(E stays on the cloth. P2 touches E's back)
P2 - E. E. do you want to go in our car?
E - No, no.
P1 - It's boring.
E - Is it... is it boring?
P1 - No, it's not very boring but... you have to eat in the car and you get hot.
P2 - Yeah, it's hot.

Situation n° 3.
(E stands up and approaches Ps)
E -No, no, no, you don't go in there, you are THE DAD, NO, no, ummmm, GET OU::T.
(E tries to pull P1 out of the bed)
E - Uhmm.....
P1 - No, I want to be in here.
P1 - E. don't pull, E. do::n't.
P1 - E. don't...E I don't want... All right E.
E - Then you go in the *... now I was giving you...
P1 - Lets ring the ambulance, quick.
E - NO, I DON'T WANT, I WANT TO.
(E pulls P1)
E - You can be the dad.
P1 - All right.... I'll be the ambulance lady, yeah?
E - I was packing this... all this up now.
P1 - Yeah, and I was the ambulance lady, yeah?
E - No, I was calling the ambulance.

Situation n° 4
(E takes the plastic bag with dough to another table.)
E - This is the dough, this is the dough.
(E leaves plastic bag on the floor. Another girl picked it up.)
E - Ueehh uehh.
(Both children pull the plastic bag. A approaches.)
A - Put it on the table, please. We sha::re it.

Situation n° 5
D - I've got to stir cause... cause...
(D holds wooden spoon.)
P1 - I had it first.
D - I've got to * I've got to...
(D gets the spoon and tries to get the saucepan but P1 takes it away from D but D still stirs in it.)
P1 (to observer) - D is snatching.
P1 - You don't do that to me D. D you don't do that to me.
D - Why? You're snatching the cake now. * snatching from... you...
P1 - You snatched it from me.
D - But this is the groomer... is getting all yolky now.
(D lets P1 use the wooden spoon and P1 mixes with it. P4 approaches.)

Situation n° 6
(A feels a saucepan that belongs to P2.)
P2 - That's mi::ne.
A - No, I have to cook it.
P2 - AAAHN.
(A holds on to the saucepan and tries to put it in the oven but P2 holds on to it as well and doesn't want A to get it.)
A - I've got to COOK IT. Why don't you let me cook it?
(A pulls it hard and gets saucepan, some conkers fall off from it)
A - I have to take it.
(A bends down to pick up conkers that fell and leaves saucepan on worktop. P2 takes saucepan away.)
A - Am I... I... eah eah.. I haven't anything to cook.
(A looks for saucepan on worktop, then follows P2's arm, feels the saucepan and grabs it.)
Adult - C can you tell A what you were doing?
(P2 looks at adult and gives saucepan to A and plays with a frying pan instead. A takes saucepan to oven.)
A - I've done it.
(Adult carries on talking to P2. P2 nods her head saying yes. A feels P2's frying pan and takes it away. P2 does not resist.)
A - "Paa I ne::ed..."
Adult - A you just ask first.
A - Can I have this? Cause I need it, I need to have two.
(A puts it in the oven and then on the worktop.)
P1 - For our picnic A.
A - I need to have two.
(A feels plate that P2 holds but he doesn't grab it. P2 leaves plate and picks up frying pan that she had previously and that A left on worktop.)
A - "Ye::s, I say it would be nice if..."
(P2 uses a spoon to stir in the sink, A feels object in the sink.)
A - May I have that spoon?
(A grabs spoon from P2.)
A - "Just to... see if I can stir... all..."
(A stirs objects in the oven.)
A - NOW LETS wash the spoon.
(P2 has another spoon. A moves towards sink and feels P2. P2 holds her frying pan and spoon right up in the air and tries to move away from A. But A follows her and grabs frying pan.)
A - Can I have they?
P1 - Shall we finish now?
A - AAAAH I'M STILL COOKING.
(P2 holds on to frying pan and follows A as he is pulling it.)

A - Aaaah Can I have that?
(A takes frying pan from P2 and puts it in the oven, then puts it in the sink. P2 watches A.)

Situation n° 7
(A feels a piece of pretend bread that P1 is holding and tries to get it from her. P1 resists but A gets it.)
A - Oh this... NO, NO, I need to have that.
P1 - This is bread, is bread A.
A - I need to cook it.
P1 - It's very FAT you know?
A - It doesn't matter, I can fit it i::n.
(A puts bread in the oven.)
A - "Good."

Situation n° 8
K - Hey look!
P2 - Don't put it any higher.
K - Look, look, look there.
(K touches house's wall where there is an empty space.)
K - It's not high enough, look.
P2 - It is.
K - No, it's *. I don't like *.
P1 - That one.
P2 - You're breaking the house.
P1 - * we are not going to *.
K - Thank you.
K - I need twoers... we need twoers.
P2 - We don't if you be...
K - Look... look.
(K puts his fingers on the house where he feels that there is a piece missing.)
P2 - Let me finish *.
P2 - It's going to...
K - How big is this house going to be?
P1 - About seventy... about, about I can't remember, I don't know.
P1 - As big as your home * white house K.
K - Oh! This was doing the problem.
K - THIS IS A BIT HIGH a little bit high. That's the problem see?
(K shows piece to P2, there was an extra lego piece attached to the other which made it higher than the others.)
P2 - Oh yeah! I see.

Situation n° 9
K - Hey! That's the problem.
P2 - What?
K - That.
(K touches a part of the house.)
P2 - No, it isn't.
K - Look, that's higher.
P2 - Come here, you haven't pressed down enough.
(P2 presses it down.)
P2 - That's it, look.
K - Yeah, it is, look. It's...

Situation n° 10
P1 - I'm just going to do something.
P2 - That's it, that's it.
(P2 takes pieces from P1 to make the roof.)
K - That's it.
P1 - No, no, no, no we have to put something in the middle of the roof so it can stay together.
P2 - Will stay together S. Look!
K - I know how to do it.
(P3 joins in.)
K - It goes like this.
(K takes pieces and puts it on the house.)
P2 - Wait a minute.
P1 - Look how big the house look **.
(P2 moves pieces with K and tries to control where he is going to put it.)
P2 - That's it, that's it.
K - No, I show you...
(P2 tries to take piece from K but he resists.)
K - It goes like that.
(P2 takes another piece that was on K's lap. K presses piece down.)
P2 - Ok now let me put this one.
(P2 puts piece next to the one K's put on.)
P2 - And then it will strength it.
K - It's not going to strength *.
P2 - Ok now we put the this... now we put the red roof on.
K - Ye::ah.

Situation n° 11
P1 - What about a window?
K - No, it's not a ...
K - It's a Victorian house.
P1 - A Victorian house has windows. A Victorian house has windows. A Victorian house has a door and windows isn't it?
P2 - Yeah.
P2 - But it's his house.
P1 - utterance
P1 - I would, I would be sweating.
P2 - Yeah. Well S they didn't have lights, did they? They had candles.
K - Yes, remember?

Situation n° 12
P2 - We can have two flags in our roof.
K - I don't like flags, it's my house.
P2 - Do you want to put one flag then?
K - No, no flags, they did... they didn't have flags on, on, on Victorian houses.

Situation n° 13
P2 - Why are you taking the shapes out now P?
T - You take them out.
(T has his hands inside the box.)
P2 - NO.
(P2 doesn't let T take shapes out of the box, she moves pieces around the bottom of the box.)
T - You put * you ** the shape out.
(T takes his hands to his eyes.)
P1 - No, I didn't.

T - I can see.
(T looks for a shape on the table and finds one which he shows to P2 holding it in the air.)
T - See?
P3 - It's D's, isn't it?
P1 - Yeah.
P2 - We'll never get finished to do this.

Situation n° 14
P1 - Sort it out.
P3 - Ya ya.
T - STOP IT S.
(T is feeling some shapes and P2 takes them away.)
P2 - We are going to sort it out T.
P3 - Leave them all outside.
T - We're taking all of them out?
P1 - No, only take some out.
(P2 takes shapes out, distributes them, controls everything.)
P2 - T, take all of them out.
P3 - Yeah.
T - No... I haven't *.
T (to P1) - A. that take...
P1 - utterance
T - Oh! STOP IT.
P2 - T we need to start again.
(There are two boxes on the table now. One with shapes all mixed and the other where the children try to sort them in a layer in the bottom of the box.)
T - Right. That one, lets make some *.
(T puts shape in the box.)
P2 - No, we can't.
T - I can.
P2 - You've done it wrong T.
(T carries on putting shapes in the box where peers are trying to fill the bottom of the box.)

Situation n° 15
T - I'm making a... I'm making a scarecrow.
(T puts pieces together.)
P2 - Yeah (utterance)
P2 - YOU CAN'T MAKE A SCARECROW.
T - I CAN. I'M JUST PRETENDING. I'm...
P2 (to adult) - He is making a scarecrow.
(P2 leaves and approaches adult.)
P1 - He is just pretending.
T - That's it. You really understand it.
P3 - STAND, STAND BY. She's gone over to **.
P2 (to adult) - He is doing it wrong.
A - Tell him what... what's going on and help him...
(P2 comes back.)
P2 - You have done it wrong.
T - N:::O. I've just made that scarecrow.
(P2 pushes T's hands away.)
P2 - STOP IT.
P1 - We're not making a scarecrow.
T - I am, I am.
P1 - (utterance) We've got to put it is supposed to be.
T - Tell the, tell A. We're making a scarecrow up.

P3 - We're going...
P1 - utterance
(T is trying to make a scarecrow, he has his left hand feeling what he is doing and with the right hand he picks up shapes. Peers are putting shapes around what T is doing.)
T - Oooh!
T - I need two left, two left, I put two left.
P2 - We are doing a *.
T - Oooh! I didn't want that one. You nasty!
P2 - Mrs he keeps making a scarecrow.
P3 - T we don't make a scarecrow.
T - Oooh!
P2 - I'm trying to put it back there.
T - Tell them A.
P1 - What?
T - They are messing my scarecrow up.
P1 - We're not supposed to make a scarecrow.
T - I am. I am... I am.
P1 (to P2) - Put it back there.
(T touches his eye with one hand and feels shapes with the other. P2 organises shapes in the box.)
P3 - Look the mess you've made!
T - I haven't. I just made that scarecrow.
P3 - You're not allowed to...
T - I am... just pretending amn't I A?
P1 - What are you making a *, this is different.
(P2 tries to take shape from T but T moves it away.)
T - You * boys. I choose some more.
P1 - If you make another scarecrow we're still going to make *.
T - No, no. I tell silly you.
(P2 puts shape in box. T touches it and moves it sideways. P2 struggles with T because she wants the shape somewhere else.)
P3 - Yeah, but we aren't supposed to make a scarecrow.
P2 - T.
T - Right. Making another scarecrow.
P3 - No, you're not.
T - Yup.
P3 - No, you're not.
P1 - No, you're not. Silly boy T.
P2 - No, you're not * T.
T - (utterance) I tell her if you mess my scarecrow up. I just made this.
P2 - They are watching.
P2 - They are watching.
P3 - Silly Billy T.
(T has one hand in the box and the other touching his eye.)
T - I'm tired of you.
(T touches his eyes with both hands.)
P3 - What's the matter? Put it in the middle.
P2 - I ca::n't.
T - Mr::s.
A - What's the matter T?
T - They are messing my scarecrow up.
A - I'm just going to put the paintbrush back and then I (utterance)
A (to P2) - If you tell him what you're doing S **.
P2 - T, we are making... we are making a * round the *.
T - I'm not. I'm making a * house.
P2 - No, you ca::n't.
T - I need to.

P1 - I make a house. I make this.
T - You can make anything.
P2 - Special **.
T - You can make anything.
(T touches shapes and moves them around, peers take shapes out of the box.)
T - You could anything.
P2 - No, you can't.
T - Yes.
T - If I make... if you make... if you made a * and I something... a house. I need to.
P3 - We need some more shapes.
T - And then one more * next and I don't play with you.
P1 - Well, you don't know ** just not playing the same game.
T - I will complain to R.
P1 - Who?
T - You two silly girls.
P2 - Ha ha ha.
P1 - Girl?
T - No. Ha ha ha.
P1 - You * playing with a boy.
T - I'm playing on my own actually.

Situation n° 16
T - A.
P5 - Yeah.
T - I'm making a sword.
P5 - You can't make a sword.
T - I can.
P5 - You can't.
T - I'm making the biggest sword.
P5 - You can't, you can't.
T - Can, can, can, can, can, can...
Situation n° 17
(N grabs plastic bowl from P1 but P1 doesn't let it go.)
N - Let me have this.
P1 - No, I'm going to *.
(P1 sits on a stool.)
N - I, I, I, no I will.
(N tries to get bowl and keeps pulling it. The other bowl that N is holding hits P1's head but N didn't realise. Both N and P1 hold on to bowl pulling it.)
P1 - No, aaahaaah.
N - I want this.
(N almost looses her balance but both children carry on pulling the bowl.)
N - Hang on, hang on.
(N puts her other bowl and spoon on the table. While she does it the bowl hits P1 in his face. N grabs P1's spoon as well and both children pull it.)
N - Aaah.
(N takes another spoon from the table and leaves the other with P1. N keeps mixing and pulling the bowl. She moves her head sideways. P1 talks to P2 but P1 and N keep pulling the bowl.)
N - Go and get another.
(P1 looks at N with a serious look. N keeps pulling the bowl.)
N - utterance
(N pulls bowl up, then mixes with the spoon, takes spoon to the other bowl and mixes again in bowl that both children are pulling. When N mixes, the spoon hits P1's fingers, P1 shows an expression of discomfort and pain.
P1 - Aaah that hurts.
(N bangs spoon on bowl. P1 closes his eyes.)

N - I'm the mu::mmy.
P1 - N:::
(N keeps mixing in the bowl, then she looks to P2 who has a colourful skirt over her head, N leaves bowl and approaches P2. Then she comes back to the table.)

Situation n° 18
(N touches bowls then tries to grab spoon that P1 is holding.)
P1 - Uah (utterance)
N - Ahaaah. I want my spoon. Give me *.
(N mixes with her hands, then she grabs spoon from P1 and pulls it.)
P1 - N.
(N keeps pulling the spoon and P1 keeps resisting. N mixes and takes spoon to her mouth although P1 is also holding it.)
N - It's * my diner. Isn't yours.
(N's lifts bowl up to her head and almost puts her head inside it.)
N - Have a fork.
(N keeps mixing and taking the spoon to her mouth. Both N and P1 keep holding the spoon. Then P2 gives wooden spoon to P1.)
P2 - Have this one.
(P1 holds spoon that P2 gave him and mixes with it. N has now a spoon to herself and each child has a bowl.)

Situation n° 19
P3 - Ouh loads of food.
C - Not, not yet. Don't eat.
P1 - Not yet.
(P3 pretends to eat.)
P1 - (utterance) there you go.
(P1 gives plate to P3.)
C - No, I'm going to put...
(C takes plate from P3.)
P3 - That's mine.
(P3 extends his arms to get plate but C moves it away.)
C - I... I... I'm going to put... the...
P3 - Give me that back.
C - I'm going to put the things on.
(C pushes P3's arm away.)
P3 - That's mine.
C - But I haven't got to put the food on yet.
P1 - And I've got to *.
P3 - That's mine.
(C puts food on plate.)

Situation n° 20
(P2 gives plate to P3.)
P2 - There is your piece of cake.
C - Don't eat it yet. though.
P3 - No, I'm not going to eat it yet.
P1 - Can I put the food to eat mum?
C - N:::o n:::o.
P1 - C I don't want anymore of my food.
C - No, you haven't ate any yet.
P3 - utterance
C - No, I...
P2 - utterance
C - Don't K.

P3 - Don't K.
(P3 teases C.)

Situation n° 21
(T doesn't get completely inside and doesn't close the doors. P2 tries to open the door but T is trying to close it.)
T - Get off the DO::OR. (utterance)
Teacher - Well... H has got one of the doors and you've got one as well. What is it for? What are you going to do? H What are you going to do with your door?
(P2 opens door which for her means closing the door of a limited space.)
Teacher - Right, close it.
(T gets in cupboard and closes one of its doors. Teacher talks to another peer.)
Teacher - All right, you made a coach. Your coach to France.
(T tries to close the other door.)
T - Close the door B.
Teacher - Oh no T. You're not going to shut the door and YOU are not supposed to be inside the cupboard.
P8 - It's dark inside.
Teacher - It is dark inside the cupboard.
P8 - And its that ** might be **.
Teacher - That's a problem isn't it? It's dangerous isn't it?
P2 - Yeah. That's the sink.
Teacher - That's right.
T - Why are you in here?
Teacher - T, T... you are underneath the sink, you are underneath where everyone does the washing up. If you reach up you can...
T - Get out... get out of... get out of here.
(T gets out of cupboard.)
Teacher - You reach up and you can feel where all the plates and things are supposed to be for people to do the washing up.

Situation n° 22
P1 - Pretend we are all tied up.
P1 - I was the fighter, I was the fighter... but I just come * I wasn't there yet.
P1 - We were all tied up.
(S pretends to untied P1.)
S - I come and save you in a minute.
P1 - No, no, no... ah you're tied up as well but I... but I...
(P1 moves to other side of the room. S follows P1.)
S - I could get out.
P1 - N::o, no, no, you're tied up and then I've found a split.
P2 (to P1) - You found a hard way of getting me out * where you put my hands * * * .
(S watches.)
P1 - Yeah and... and pretend that my... my was split in.
S - And mine is.
(P1 moves towards bookshelf and pretends his hands are tied behind his back, S follows and imitates P1.)
P3 - I've got us out.
P1 - No.
S - Yeah.
P1 - Not yet.
P3 - I was Roger trying to do like *.
P3 - I got out but I didn't do anything.
P1 - No, no, no, no, no.... look!

APPENDIX 9

Pre-determined tasks

Daniel

Session n° 1
Partner: male
Task: stairs

When the teacher left the children to perform the task together, each child picked up a brick and tried to build steps. Daniel did not know where to build the step. He tried to build the steps on top of the model already made. He requestsed information from his peer but initially he was ignored and later his peer responded but provided very limited information:

Daniel	Partner
(L and D pick up a brick. L builds the steps where the T asked to do it. D tries to put a brick on top of the steps already made. The children cross their arms to do it since the steps already made are in front of L and the place to build new steps is in front of D.)	
How do we do *? How do we build steps? Like this?	
	You have to...
How do we go all along?	
	You... you put one first, then two, then...
I'm putting this step on... this step on...	
(D is still trying to put brick on steps already made.)	
	Ha ha.
That step wont fit on. These are steps aren't they?	
(D pushes board around trying to put the brick on, he puts it on top of an already made step.)	
I put a step on.	
(L carries on building the steps, D looks for lego, he finds a doll. L takes out the brick that D put on.)	

Meanwhile Daniel's partner completed the task on his own and looked at the teacher. He did not attempt to show the completed task to Daniel. The teacher approached the children and asked them to try again but this time to do it together. During their second attempt the children tried to build steps where asked to do so. Daniel's partner waited for him to put the first brick but Daniel put it on the wall. In face of the difficulties and lack of information from his environment, Daniel opted to play with the doll instead. He showed difficulty in finding bricks and in understanding if the task was finished and his partner did not provide any verbal information about what was happening. In the end, Daniel's partner completed the task on his own.

Daniel

Partner

Put... put... I'm going to to put a spare block on the wall... I have a spare block. Now I need to put the steps.

(D tries to put a brick over the steps that are already built.

Ha ha.

We've done them, I think.

(D feels what L is building.)

No, we haven't done.

(D looks for bricks moving his hands on top of the table.)

Where is more lego?
This is a castle. I can build a step another step.

(D picks up a brick and tries to put it on the side where it's necessary to build steps.)

That was... that's a good step.

Yeah.

(L tries to put brick on but waits because D has hands on top of the steps.)

Where is it gone now?
Uh.
This might be (utterance) Is lifting one leg up, is going to hop on one leg. Is trying to to but it can't.

(D plays with doll while L builds and completes task. L looks towards T.)

Session n° 2
Partner: Female
Task: Tower

Daniel requested information from peer about how to perform the task but his peer did not explain, just informed him that the way he was trying was not the way to do it. Daniel's partner tried to get a beaker that he had but Daniel refused and requested information about how to perform the task again. This time his partner moved the tower closer to him so that he could feel it. Daniel received very limited verbal information from his peer and it was usually to inform him that he was not doing it right. Besides, his requests for confirmation of his actions were ignored.

However, his partner let him place some of the beakers and occasionally moved the wrong beaker away so that Daniel could pick up the beaker that should go next.

Daniel | Partner

I need... I need the big one. How do we make them, then?

(R pushes tower towards D so that he feels it, D tries to put one of the beakers on top.)

No, not that one, the other one.

(R tries to pick up beaker that will fit on tower but D holds it and puts a small one over a big one.)

Fit it on... fit it on like this.

N::o.

That one is too big?

(R picks up beaker, D lets her take it and she puts it on the tower then D brings the other beaker and puts it on the top but it is too small. So R fits beakers n° 1, 2 and 3; then D fits beaker n° 5 on n° 3.)

Put this one up... and that one.

(D tries to put beaker n° 4 on beaker n° 5. R takes the beaker n°5 away and lets him put beaker n° 4.)

That's *, that one goes... and that one...

(R puts beaker n° 5 on n°4. D finds beaker n° 6 and puts it on top of the tower.)

Put it on... we are still building it.

(R puts beaker n° 7.)

Now we need another one.

(D puts beaker n°8.)

We've done it.

Session n° 3
Partner: Teacher
Task: Cube

The teacher gave time to Daniel so that he could find the necessary building pieces and keept giving him encouragement throughout the task. She also provided verbal information about the actions being performed.

Daniel	Teacher
You need to put these, push these... ones together. Click click.	
	Remember what we said.
How?	
	Find the peg... and the hole to put them in.
Like this? That?	
	Ahh Ahh. ** to push hard.
I've done it.	

(D did it but T pushes harder to keep the pieces together.)

Now I need a... this one to go in... the middle.	
	OK.

(D puts a multilink piece on the side.)

	Well done. Yes.
And... and that one fits in the square * like that.	
	Did it click in?
I can't.	
	Push hard. That's it.

At some point Daniel thought he did something wrong because his model did not feel like a square and started pulling pieces apart. The reason why it did not feel like a square was that one piece was missing and Daniel could not find it. The teacher provided information about where the piece was and Daniel finished the task.

Session n° 4
Partner: Teacher
Task: Tower

The teacher explained that he needed to find the biggest beaker that was on the table and carry on until he put the smallest on top of the tower. Daniel tried to perform the task by trial and error and the teacher asked Daniel to feel all the beakers that were on the table and then find out which one was the biggest. This took quite a considerable time for Daniel to do. The teacher tried to understand why Daniel chose a particular beaker but Daniel had difficulty in explaining why, he just said that he wanted to chose that one.

Daniel	Teacher
	Can we see if we can find the biggest one that is left. The biggest one that is left and see if that's the right one to go on.
(T takes D's hand to n° 2.)	
	Do you feel that's the right one?

Yeah.

So what do we...

(D puts n°3 on, then n°5. T takes n°5 away.)

Have a feel of all the ones you've got and see which... which might be the best one to come on.

(D feels beakers.)

One, two, three, that one.

(D picks up n°4, the biggest on the table.)

Why did you choose that one?

I wanted to.

At the end the teacher asked Daniel to compare the tower they built with the model that was given.

Session n° 5
Partner: Male
Task: Cube

Each child individually built a square and Daniel said that he did not want to do anymore. His partner then put the squares together to build a cube.

Session n° 6
Partner: Female
Task: Stairs

Daniel's partner started building while Daniel felt the top of the model and said that they had finished. Partner contradicted him and carried on until she finished the task. The teacher intervened and asked them to try again. Daniel only touched the bricks and counted how many dots they had rather than using them to build. His partner did not provide any verbal information.

Daniel | Partner

One step.

(R builds.)

One... I count how many dots.
One, two, three... four, five...
five dots there is.
One, two, three, four, five, six,
seven, eight, nine, ten.

(D touches the bricks while R builds. R needs D's bricks to finish the steps. R touches D's hands.)

We've done it.

(R builds.)

We've nearly done it.

Session n° 7
Partner: Female
Task: Cube

Daniel took the lead and started building the cube. His partner tried to help him pressing the pieces down but he moved it away. When he did not find any more pieces, his partner took the cube away from him and finished it herself. At the end, Daniel moved his hands towards his partner to feel the cube that she was building.

Daniel Partner

And one more.... makes cube.

(D touches R's hand and she gives him another piece. D presses hard.)

Oh oh oh, it doesn't link. It doesn't link.

(R tries to press down as well but D moves it away.)

I'm going to choose another one.
That one doesn't link. I'm doing it.

(D moves it away from R who tries to press down as well.)

Just one more there. I can't see anymore.

(D looks for pieces, he touches R's hand.)

We've done it.

(D finds a crocodile.)

That's R's. Where is my crocodile?

(R takes cube away from D and builds finishing the cube. D holds one crocodile and one cube and bangs the crocodile on the table.)

Session n° 8
Partner: Teacher
Task: Stairs

The teacher gave initial explanation on how to perform part of the task, then gave time to Daniel to perform it and asked him to compare with the model. She then asked him what did he think that needed to be done next. Daniel found it very difficult to perform this task and the teacher took his hands to make him feel the model and kept on providing encouragement.

Daniel	Teacher
	Now listen. Can we * while I show you something. When you start at the wall, you come down the step, down, down, down.

(T holds D's hand and takes it to the wall above the step already built and moves his hand down the steps, one at a time. Then T takes D's hand to step he has to build.)

	Lets feel yours. From the wall you go up. So we need to make, from the wall, a step down. What do you think you need to do?
Oh no! What do we need to do?	

(D takes brick off the step he was building.)

	That's it. That's it. You are doing it right. Take that one off. That's it. Now is it going do::wn, yet?

(T holds D's hand to feel the top of the wall and step.)

No.	
	No, so take that one off.
(D takes brick off.)	
	That's right. Now, lets try it now.

(T takes D's hand to feel top of wall and step.)

	Down. That's right. That's the same.
(T takes D's hand to step already built.)	
	Down. Now you've got to make one so that you can go down again.

(T takes D's hand to next step.)

Session n° 9
Partner: Male
Task: Tower

Daniel tried to build the tower and explained to his peer that they had to find the bigger beaker to go in the bottom of their tower but by then his partner had built half of the tower. Daniel kept requesting the big beaker and his partner told him that it was at the bottom and while Daniel was feeling it, his partner finished the task. The children tried again and in their second attempt Daniel's partner provided more verbal information. Daniel's partner also laughed when Daniel made a mistake, patted on the beakers so that Daniel could find them and he referred to the beakers by their colour. He also showed difficulty in giving a beaker to Daniel and referred to it as "This one.".

Daniel

Partner

(D puts n°6 one n°2.)

That one fits.

(D puts n°3 on n°2.)

That one fits.

(D puts n°1 on n°3. L laughs.)

That one goes on the bottom D.

(L puts it on the bottom but D feels what he is doing. N°3 falls off.)

Oh! That one fell off.

Yeah.

(D and L put it back.)

Put it back on.

There.

Now that one the other building, yeah?

(L puts n°4.)

And... that one.

Not yet.

(D puts n°6, L looks at beakers on table and picks up n°5.)

This one.

(L tries to give n°5 to D but D swaps n°6 by n°7. L tries to take n°6 out but D is quicker and puts n°7 on.)

That one first and then that one.

(L laughs. D puts n°6 on n°7.)

This one.

We built it.

(D looks for beakers and does not find any.)

Not quite, we have not build it yet.

.....

(L puts n°5 on. D is holding blue n°6 and L touches D's hand.)

Now put the blue one.

(D puts n°6 on. D holds n°8 and L holds n°7. D is going to put n°8 on but L moves quickly and puts n°7 first. D puts n°8 on n°7.)

And then there... and then the yellow.

(N°7 falls off, L picks it up.)

Ah! We have to get the red one.

(L puts n°7 on and D puts n°8 on top.)

Nelly

Session n° 1
Partner: Male
Task: Stairs

Nelly refused to carry out the task, she pulled the model apart and kept on trying to put bricks together but to make a bed instead, etc. Her partner performed the task and asked her to let him do it "Nelly, Nelly * please", but Nelly was not interested and carried on breaking the model. There was no attempt from her partner to provide information about the task.

Session n° 2
Partner : Female
Task Tower

Nelly accepted the task and tried to build tower by trial and error. Her partner waited for Nelly to try and then put the beaker she thought that should go next. Nelly touched model tower and the top beaker fell and she threw all the beakers on the floor. Teacher intervened and asked Nelly to pick up beakers while helping her find them at the same time. The teacher accepted Nelly's interest in a party. There was no verbal exchanges between the children. They managed to perform the task but they never discussed it.

Nelly	Teacher
I make a party.	
	Try to make it with L, a tower.
No.	
	Well, I thought you need a... you need a tower for your party, OK?
(T builds one of the towers again.)	
	Right. We need two towers for our party. We have one, and you need another one, OK? To make another one. Do it with L OK?
(T leaves. L puts n° 1, 2, 3, 4, N puts 5, 6, 7 and L puts n°8.)	
	Good. Do we have two towers? Are they the same?
Yeah.	

Session n° 3
Partner: Teacher
Task: Cube

Nelly refused task, pulled pieces apart and felt them with her mouth. The teacher tried to explain why they needed to make another cube which they were pretending was a house for the crocodile and suggested making a party as well. Nelly kept saying that she did not want to do it. The teacher decided to perform the task but asked Nelly to check if she was doing it the right way. The teacher

controlled Nelly's hand movements to feel the pieces. In the end, Nelly helped the teacher pressing pieces together and the task was completed by the teacher but with some participation from the child who followed the teacher's moves.

Nelly	Teacher
	Ops! Shall we finish the house? One more here. Press down.
(T holds N's hand and presses multilink. N mouths the crocodile.)	
	And now. Where is the other one?
(T lifts N's jumper and takes piece that was underneath it, then T takes another piece out of N's mouth.)	
	That's the crocodile N. That's the crocodile.
(N leaves crocodile and brings cube to her mouth but T holds it.)	
	Look! The house is almost finished. It just needs th::is one. Where are we going to put this one? There. Ah! Press hard... ops, it's almost.
(T holds N's hands and they both press down.)	
	Go::od. Look now they are happy. Now we have a house for one crocodile and another house for the other crocodile.

Session n° 4
Partner: Teacher
Task: Tower

Nelly accepted the task but destroyed the model several times. She first tried to perform the task by trial and error. The teacher explained that she needed to find the biggest beaker that was on the table to go at the bottom of the tower, etc.

Nelly	Teacher
	Which is the biggest N?
This one.	
(N puts n°1 on the table.)	
	Go:::od! So this one goes in the bottom. Now...
(N tries n°4 on n°1.)	
	What is the biggest now... from the other ones that are... on the table, here.
(T holds N's hand and touches beakers she is referring to.)	

What do you think?
Shall we try that one?

(T holds N's hand and they put n°2 on n°1.)

Go::od!
And now what do you think?

(N picks up n°3 and puts on n°2. T just holds the bottom of the tower preventing it from falling.)

And that one.

Good!

And that one.

(N puts n°4 on n°5.)

When later Nelly made a mistake, the teacher asked her to compare the tower she was building with the model. On this occasion the teacher referred to the colours of the beakers which Nelly could identify by getting very close but she did not answer the teacher instead she tried to play with the doll. The teacher asked then to compare the heights but again Nelly did not answer.

Nelly	Teacher
	Ops, there is something missing, isn't it?
No.	
	Look, what is at the top?
One...	
(N holds dolls.)	
	What colour is the top of the... tower that you've made? What colour is the top?
(N puts doll on tower.)	
She can stand up, can't she?	
	Yes, she can stand up. But there is... what colour, what colour is that one N?
She can stand up from there.	
	Yes, but are they the same height? Are they? The two towers?
** stand up.	
	OK. N look! Ops.
(Doll falls from tower, N picks it up.)	
	There is one underneath that one, look.

(T lifts n°7 and shows n° 8 which is underneath n° 7.)

	Shall we take that little yellow one? we take it off? Off of the tower?
Shall	

(N puts doll on tower, doll fall and n°6 falls.)

Put the red one first.

Meanwhile, Nelly knocked down the tower and the teacher and Nelly built the tower again using the same strategies.

Session n° 5
Partner: Male
Task: Cube

Nelly's partner tried to build cube while Nelly tried to interact with teacher and pull apart the models. The children tried to perform the task again. This time Nelly wanted the pieces on the table in front of her and her peer tried to get them, Nelly tried to negotiate by offering him the pretend crocodile. This generated conflict and Nelly ended up breaking the models up while her partner built the cube. The verbal exchanges between the children were very limited.

Nelly Partner

(A tries to get multilink pieces that are in front of N.)

No.

(A tries to get multilink pieces that are in front of N. N holds A's hand and takes multilink away from him. A tries to get multilink pieces that are in front of N.)

No. That one is yours.

(N points to crocodile that she gave to A.)

No. (utterance)

(N breaks crocodile and puts it in her mouth. A tries very quickly to get multilink pieces that are in front of N.)

No.

(N grabs crocodile and other house that are in front of A.)

(to T) - She is going to break that one up.

(N pulls it apart and takes pieces to her mouth. A carries on building the cube.)

Session n° 6
Partner: Female
Task: Stairs

Initially Nelly broke the model up and both children laugh. Teacher intervened and introduced task again but Nelly kept on breaking the model up, she asked her peer not to build and said that she was building a swimming pool. Although Nelly's partner tried to build some stairs she stopped her activity as Nelly asked her to. Nelly's partner never tried to explain the task to Nelly or to get Nelly to engage in the task.

Session n° 7
Partner: Female
Task: Cube

Nelly refused the task and said she was making a garage, a party, etc. Her partner started building and watched Nelly who broke the model up. Nelly's partner laughed. Nelly carried on talking like she was singing and again the verbal exchange between the children was very limited. The task was never completed.

Session n° 8
Partner: Teacher
Task: Stairs

Nelly refused to carry out the task and the teacher tried to interest her by suggesting that the two dolls were Nelly's favourite story characters. Still, Nelly refused to engage in the task and it was never completed.

Session n° 9
Partner: Male
Task: Tower

Nelly tried to perform the task by herself and kept breaking the tower up. Her partner keept on trying to build the tower and there was conflict between the children. This conflict was characterised by the children's actions of building and destroying the tower with no discussion about what they were trying to do. This time Nelly refered to the beakers by its colour. She refused to accept what her partner was trying to build and in the end threw the beakers on the floor. The task was never completed.

Nelly	Partner
I'm doing it by myself.	
(N puts beaker n° 5 on n°3.)	
	That's wrong N... N.
(A puts beaker n°2 on n°1. He tries to get beaker n°3 from N.)	
	* has to come on top of this one.
(N picks up another beaker. A tries to take beaker n°3 away from N.)	
N:::::o.	
	N.
Put... put this one on.	
(N puts beaker n°4 on n°3. N breaks tower that A started building.)	
	N (utterance)
No.	
	N.
Now we need two.	

(N lifts tower that she built and it falls. A gets beaker n°4.)

N::::::o.

(N tries to get beaker n°4 from A.)

I need the yellow one.

(N takes beaker n°4 away from A after he resisted, then N tries to take beaker n°1 but A doesn't let her.)

N.

(A picks up beaker n°4.)

Yellow.

N.

(A puts beaker n° 2 on n°1.)

Blue one.

(N breaks tower that A is trying to build.)

And yellow.

(N grabs blue beaker and then yellow one.)

And another yellow.

APPENDIX 10

Correlations

Hypothesis 9 - The age and degree of vision impairment are factors that influence the presence of an adult.

Age - time spent with adult on a one to one basis - significant $p<0.05$

N	20
$\sum D^2$	1937.5
Rho	-.457
Z	-1.991

Age - time spent with an adult with or without peers - not significant

N	20
$\sum D^2$	1829.5
Rho	-.376
Z	-1.637

Vision impairment - time spent with adult on a one to one basis - not significant

N	20
$\sum D^2$	1561
Rho	-.174
Z	-.757

Vision impairment - time spent with an adult with or without peers - significant $p<0.01$

N	20
$\sum D^2$	1981.5
Rho	-.49
Z	-2.135

As can be seen from the tables above, the age of a child with a visual impairment was found to be a factor that influences the amount of time spent with an adult on a one-to-one basis. On the other hand, the severity of the visual impairment did not influence the amount of time spent with an adult on a one-to-one basis, but it was found to be a factor that influences the presence of an adult throughout play situations.

Hypothesis 10 - The age and degree of vision impairment are factors that influence the control of activity of and by others

Age - following control of peers - not significant

N	20
$\sum D^2$	1513.5
Rho	-.138
Z	-.601

Vision impairment - following control of peers - not significant

N	20
$\sum D^2$	1342
Rho	-.009
Z	-.039

Age - following control of adults - not significant

N	20
$\sum D^2$	1666
Rho	-.253
Z	-1.101

Vision impairment - following control of adults - significant $p<0.01$

N	20
$\sum D^2$	2101
Rho	-.58
Z	-2.527

Age - controlling peers - not significant

N	20
$\sum D^2$	995
Rho	.252
Z	1.098

Vision impairment - controlling peers - significant $p<0.05$

N	20
$\sum D^2$	785.5
Rho	.409
Z	1.785

As can be seen from the tables above, the age of a child with a visual impairment was not a factor that influences the control of activity of and by others. On the other hand, the severity of the visual impairment was found to be a factor that influences the adult's control of the child's activity and the child's control of peers' activity.

Hypothesis 11 - The age and degree of visual impairment are factors that influence the use of others as a resource or being used as a resource by others.

Age - using others as a resource - not significant

N	20
$\sum D^2$	1100
Rho	.173
Z	.754

Vision impairment - using others as a resource - not significant

N	20
$\sum D^2$	1415.5
Rho	-.064
Z	-.28

Age - being a resource to others - significant $p<0.01$

N	20
$\sum D^2$	585
Rho	.560
Z	2.442

Vision impairment - being a resource to others - significant $p<0.01$

N	20
$\sum D^2$	609
Rho	.542
Z	2.363

As can be seen from the tables above, the child's age and visual impairment did not influence the use of others as a resource. However, the child's age and visual impairment influences the way they are used by others. The older the children are and the less severe their visual impairment, the more likely they are to be used as a resource.